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Paper TRADE JOURNAL

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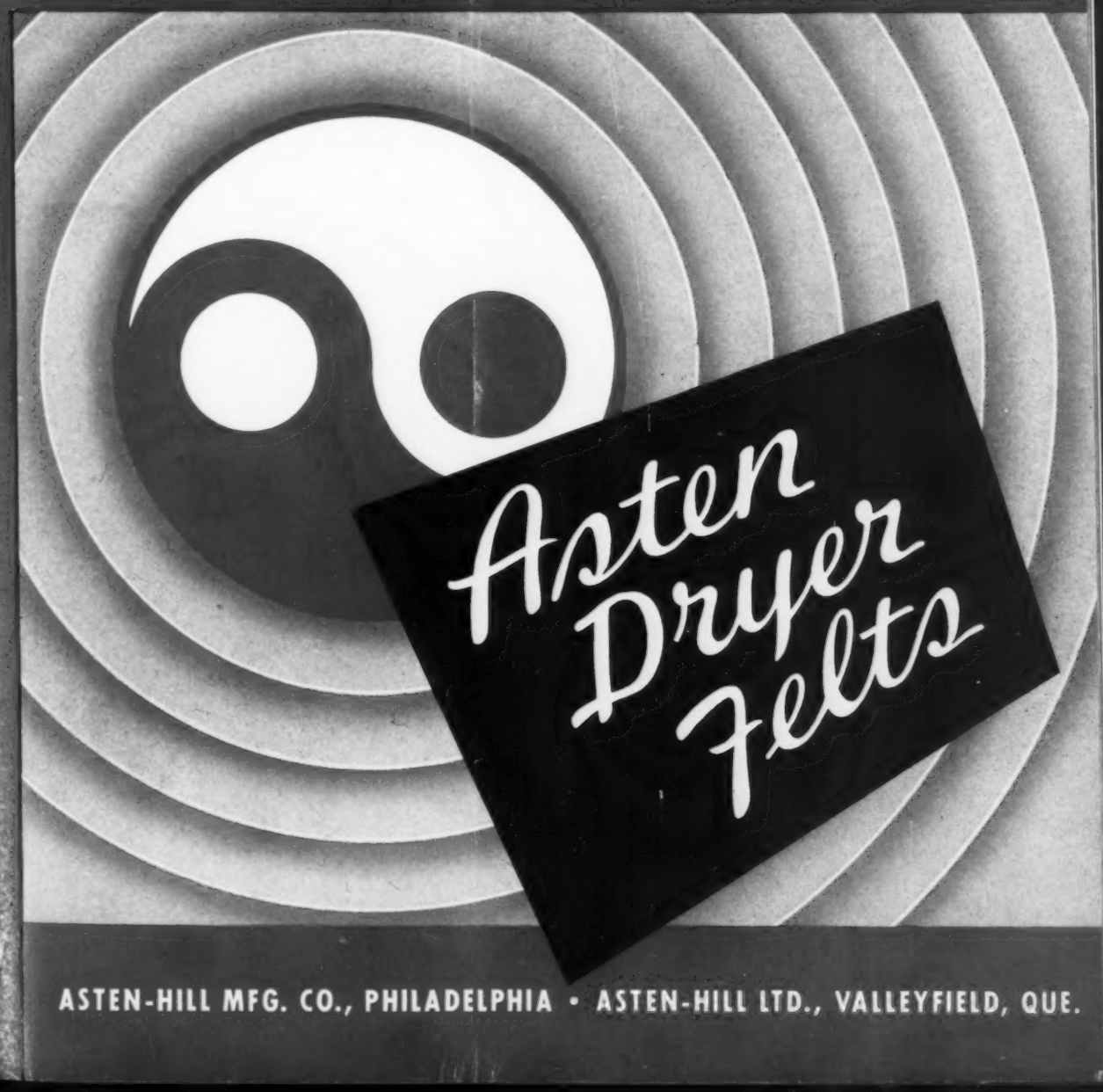
VOLUME 124, NO. 7 FEBRUARY 13, 1947



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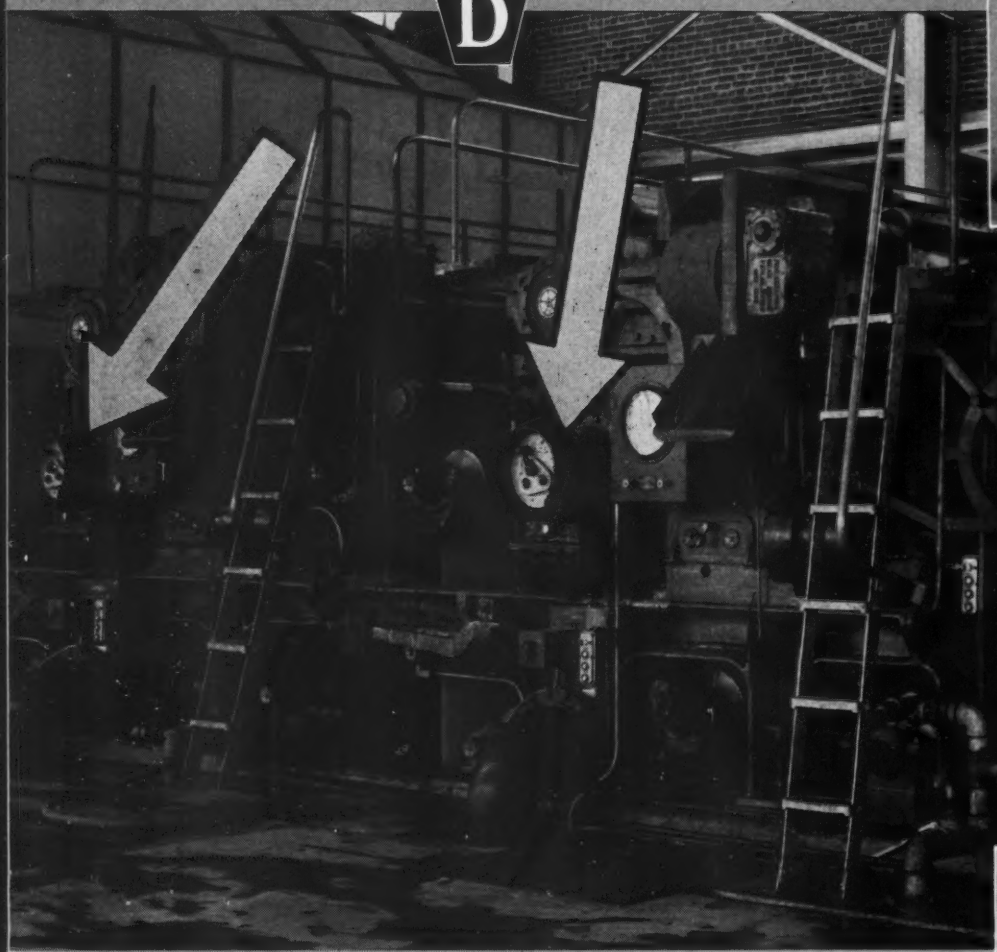

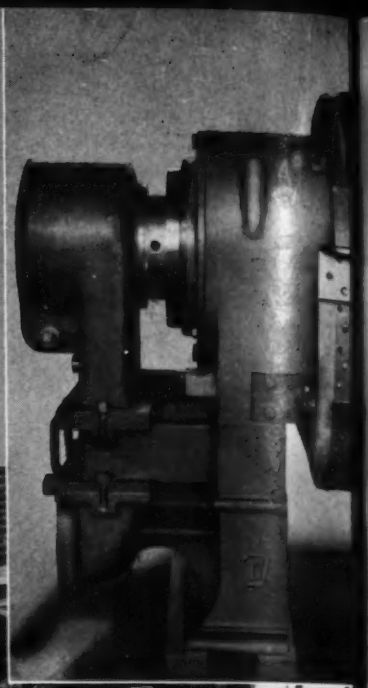

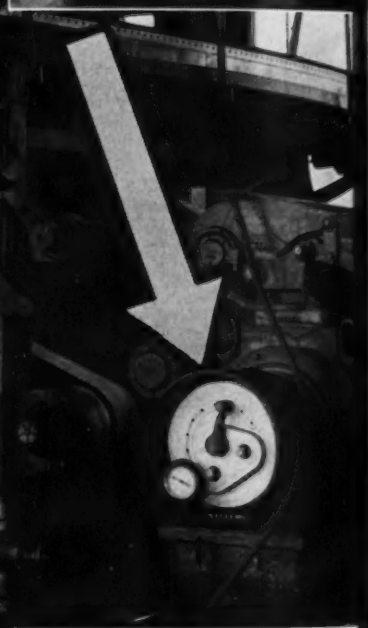

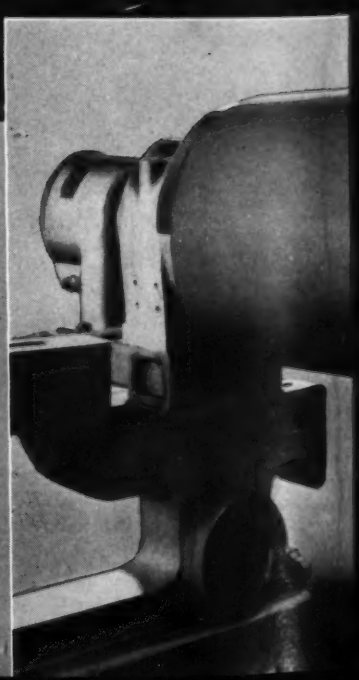

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Volume 124 — **Number 7**

Paper TRADE JOURNAL

REG. U.S. PAT. OFF.

Executive and Editorial Offices: 15 W. 47th St., New York 19, New York
Published Every Thursday by Lockwood Trade Journal Co., Inc.

GEO. E. LOCKWOOD, *President & Treasurer* ARTHUR E. GORDON, *Vice-President* JOSEPH P. HORGAN, *Secretary*
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Representative for Denmark, Norway, Sweden and Finland

OXFORD TRADING AKTIEBOLAGET
Bibliotekgatan 6-8, Stockholm, Sweden

Subscriptions: (Payable in advance) By the year, $5.00; Single Copy 15 cents. *Postage Extra: To Canada, $2.00; To Other Foreign Countries, $3.50.*
Member Audit Bureau of Circulations.

PAPER *established Feb. 17, 1899, combined with* PAPER TRADE JOURNAL *Nov. 16, 1899,* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL *Feb. 19, 1926.*

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PAPER TRADE JOURNAL *is entered as Second Class matter at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U. S. A.*
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CALENDAR OF COMING EVENTS

February 23-27, 1947—The American Paper and Pulp Association, Annual Meeting, The Waldorf-Astoria, New York City

February 24-27, 1947—Technical Association of the Pulp and Paper Industry, Annual Meeting, The Commodore, New York City.

February 25, 1947—New York Association of Dealers in Paper Mill Supplies, Inc., Annual Banquet, Hotel Commodore, New York City.

February 25, 1947—New York State College of Forestry Alumni, Annual Luncheon, Hotel Commodore, New York City.

March 31-April 1-2, 1947—National Paper Trade Association, Annual Convention, The Waldorf-Astoria, New York City.

May 22-24, 1947—American Pulp and Paper Mill Superintendents Association, Annual Convention, Edgewater Beach Hotel, Chicago.

PAPER · · · America's 6th Industry

PAPER DRAPES FOR HOME DECORATION

(NEWS ITEM: *One manufacturer alone is producing 7,200,000 pairs of paper drapes a year.*)

Paper draperies have won a permanent place in many homes all over the country. Embossed with an imitation cloth weave, these paper drapes decorate windows as artistically as expensive fabrics—at a fraction of the cost. Housewives acclaim their durability and strength, made possible by special treatment. Fade-proof, flame-resistant, paper curtains are also unaffected by grease or water. They can be cleaned with a damp cloth. We will gladly supply manufacturers' names if this product is not available at your neighborhood store.

Paper bags for vacuum cleaners . . . paper cans for frozen foods . . . paper tissues for auto windshields . . . new uses for paper calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities—new opportunities for the Pulp and Paper Industry.

The Puseyjones Organization is now devoting itself completely to the design and construction of Paper-Making Machinery built to new high standards of speed and efficiency, and to the modernization of existing machines.

Among the new machines under construction by Puseyjones are three of the largest and fastest Fourdrinier Machines, one for white paper for bags, one for Kraft liner board, and one for Kraft paper for multi-wall bags; also one Cylinder machine of record size and speed for the manufacture of floor covering felt. Other machines are under construction for the manufacture of M. G. Kraft specialties, facial tissues, and high grade bristols.

Puseyjones Engineers will welcome the opportunity to work with you in solving production problems.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

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Paper TRADE JOURNAL
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VOL. 124, NO. 7 FEBRUARY 13, 1947

Bob Nelson Elected Rhinelander V-P

RHINELANDER, Wis.—Robert F. Nelson has been elected a Vice-president of the Rhinelander Paper Company. A graduate of Annapolis in 1918, Mr. Nelson served some time overseas in the U. S. Navy until he resigned in 1922. He was one of the organizers, in 1925, of the Glassine Paper Company of West Conshohocken, Pa., which he joined as engineer, later advancing to superintendent, then vice-president and general manager (1930), and finally president in March 1944.

In August 1944 Mr. Nelson (on leave from the Glassine Paper Company) joined the U. S. Naval Reserve as Lt. Commander and served in Washington in that capacity until November 1945. Later the Glassine Paper Company was sold to other interests and Mr. Nelson was then asked to serve as Price Executive of the Pulp and Paper Branch of the Office of Price Administration, Washington, D. C., which he did from June 1 to December 29, 1946. He joined the Rhinelander Paper Company February 1, 1947.

Hayes Succeeds Dickson in Jacksonville Mill Post

JACKSONVILLE, Fla.—Norman Dickson, who for the past seven years has been paper mill superintendent of National Container Corporation's Jacksonville plant, resigned as of February 1st. Mr. Dickson is moving to New Orleans where he will devote all of his time to the antique business at 729-31 Royal Street. W. C. Hayes, who for the past six months has been Paper Mill Superintendent for the Bedford Pulp and Paper Company, Big Island, Va., a subsidiary of National Container, will assume the duties of paper mill superintendent at Jacksonville immediately.

Before going to Big Island, Mr. Hayes was an assistant paper mill superintendent at Jacksonville. He has had many years of experience, having served with Albemarle - Chesapeake Corporation from 1931 to 1938 when he joined the National organization as a machine tender.

Sidney Brown, Jr., who has been with National in Jacksonville since 1938 as a machine tender and later as an assistant superintendent, has already moved to Big Island to take the position of paper mill superintendent which was held by Mr. Hayes.

ROBERT F. NELSON
Joins Rhinelander Paper Company as Vice-President

Col. Sensenbrenner Named To Re-Negotiation Board

APPLETON, Wis. — Colonel John S. Sensenbrenner, who before volunteering for World War II was a vice-president of Kimberly-Clark Corporation, Neenah, and a director of many industrial concerns, has been appointed War Department representative on the War Contracts Price Adjustment Board by Secretary of War Robert Patterson.

Colonel Sensenbrenner also has been appointed chairman of the War Department Price Adjustment Board and chief of the re-negotiation branch, War Department general staff. He succeeds Brigadier General Maurice Hirsch, who has been released from active service in order to resume law practice in Houston, Texas.

He has received the Legion of Merit award for exceptionally meritorious conduct in the performance of outstanding services in the re-negotiation division of Army Service Forces.

The War Contracts Price Adjustment board is the statutory agency having authority over re-negotiation of contracts of the War, Navy and Treasury Departments; Maritime Commission; War Shipping Administration, and Reconstruction Finance Corporation and over sub-contracts under these contracts.

Waxed Paper Industry To Meet at Waldorf

NEW YORK—Representatives of all waxed paper manufacturers are expected to attend the annual meeting of the Waxed Paper Institute which will convene at 9:30 A.M. in the Basildon Room of the Waldorf-Astoria Hotel, New York, February 25, it was announced by A. H. Noelke, Secretary-Treasurer of the Waxed Paper Institute.

In conjunction with this meeting, the Executive Committee of the Institute will convene on February 24 to discuss plans for the future and to review various committee reports of the past year. Karl R. Zimmer, president of Zimmer Paper Products Co., Indianapolis, Ind., Chairman of the Executive Committee, will preside at both meetings.

A new Executive Committee will be elected at the February 25 session, and a new Merchandising Committee will be appointed later that day. Three additional committee activities for 1947 will also be inaugurated.

R. A. Nash, Marathon Corp., Menasha, Wis., will review the industry-wide publicity program, and will present plans for an accelerated promotional program for the coming year.

T. A. Sullivan, H. P. Smith Paper Company, Chicago, will review the Institute's industrial relations program for the past year and will present plans for the coming fiscal year.

C. C. Sherman, Specialty Paper Company, Dayton, Ohio, will make a report on the Institute's statistical committee program for 1947.

A report on "The Wax Situation for 1947" will be given by John Tuttle, Standard Oil Company. Chris W. Browne, editor of *Modern Packaging*, will address the group on the subject: "Who Is Your Competition?"

Other items on the agenda include panel forum discussions on the Robinson-Patman Bill and Trade Practice Rules by Waxed Paper Institute attorneys, Sumner S. Kittelle, Albert E. Sawyer, and George P. Lamb.

Consolidated Increases Storage

BIRON, Wis. — Consolidated Water Power and Paper Company is making provision for storage of about 10,000 additional cords of pulpwood. Spur tracks in the storage yard are being extended 1,600 feet.

Continental Acquires Hummel-Ross Mill

NEW YORK—Continental Can Company this week acquired the net assets of the Hummel-Ross Fibre Corporation, of Hopewell, Va., manufacturers of Fourdrinier and cylinder kraft sulphate paper and liner board. The mill will be used to supply raw materials for fibre drum and barrel manufacture in the Van Wert, Ohio, and Reading, Pa., plants of the Container Company, one of Continental's principal subsidiaries.

The transaction involving an exchange of three shares of Continental common for four shares of Hummel-Ross common was approved at a meeting of stockholders of the latter company in Hopewell Tuesday morning, following prior approval by the board of directors on December 6. According to this plan, 293,780 shares of the authorized but unissued shares of Continental common will be exchanged for 391,705 shares of Hummel-Ross common.

Hans Eggerss, Continental president, said that the production output of the newly acquired mill will gradually be taken over by Continental in the course of the next six to eight months. He explained that this mill will provide badly needed raw materials to expand fibre drum production. Fred E. Hummel, president of the Hummel-Ross organization, will serve in an advisory capacity, Mr. Eggerss said, and John W. Sales will continue in his present position as general manager of the Hummel-Ross mill.

H. A. S. Read Starts New Packaging Plant

BOSTON, Mass.—H. A. S. Read, with 20 years of experience in solving packaging problems, has set up his own business, H. A. S. Read, Inc., 119 Braintree St. He is equipped to engineer, design and manufacture custom-made, hand-made bags, carriers, covers, liners and hand-made containers, and packaging for a range of materials from inexpensive, light weight re-packed products to automobiles, bicycles, refrigerators, and washing machines.

Wholesale Volume Rose By Thirty-four Per Cent

WASHINGTON, D. C.—Wholesalers' sales of paper and paper products for 1946, for a selected group of 68 reporting firms, amounted to $104,791,000 according to the Bureau of Census, representing a gain of 34 percent over sales in 1945.

December sales of the group were $6,985,000, six percent less than for November, but 51 percent over those of December of the previous year. Inventories increased 2 percent in December over November and 28 percent over the previous December.

Calder and Robertson Join Institute Board

APPLETON, Wis.—Westbrook Steele, Executive Director of The Institute of Paper Chemistry, states that at a recent meeting of the membership of the Institute, two new trustees were elected to the Board. These are Alexander Calder, President of the Union Bag & Paper Corporation, New York City, and Reuben B. Robertson, Sr., President of The Champion Paper and Fibre Company, Hamilton, Ohio. Mr. Robertson is president of the American Paper and Pulp Association for the current year.

The other members of the Board of Trustees of the Institute are: Dan K. Brown, President, Neenah Paper Company; George E. Dyke, President, Robert Gair Company; D. C. Everest, President, Marathon Corporation; Sydney Ferguson, President, The Mead Corporation; Stuart E. Kay, Manager of Manufacturing, International Paper Company; David L. Luke, Jr., President, West Virginia Pulp and Paper Company; Ernst Mahler, Executive Vice-President, Kimberly-Clark Corporation; W. Irving Osborne, Jr., President, Cornell Wood Products Company; Nathan M. Pusey, President of Lawrence College; John L. Riegel, President, Riegel Paper Corporation; Karl E. Stansbury, President, Thilmany Pulp & Paper Company; Norman W. Wilson, President, Hammermill Paper Company; J. D. Zellerbach, President, Crown Zellerbach Corporation.

Harry Englander Heads Golden Fleece of Mass.

NEW YORK — Joseph Englander, Chairman of the Board, and Paul Miller, President, of Golden Fleece Corporation of New York have reported the appointment of Harry Englander to be president of the Golden Fleece Company, Inc. of Massachusetts, and vice-president of Golden Fleece Corporation of New York. Golden Fleece of Massachusetts is the manufacturing corporation of the company, whose product is Golden Fleece Four-Ply handkerchief tissues.

Harry Englander, a brother of Joseph Englander, has had an extensive engineering background. A graduate of Columbia, he is a member of numerous engineering societies and until recently was project manager for Fraser-Brace Engineering Company, Inc.

Completes 29th Year Free of Lost-Time Accidents

KIMBERLY, Wis.—The technical department of the Kimberly mill of Kimberly-Clark Corporation passed its twenty-ninth year the morning of February 7 without a lost-time accident. The last accident victim was a chemist who suffered burns about his face February 7, 1918.

Whale to Build Its Plant at Waupaca

MENASHA, Wis.—The Civilian Production Administration in Milwaukee has granted a permit to the Whale Safety Paper Company for construction of a factory at Waupaca, R. G. Whale, Menasha, president and general manager, reported February 7. The factory will be of stran-steel construction and will be 60 by 120 feet. It will be built near the Soo Line depot at Waupaca by the Eisele Engineering Company of Appleton and the cement floor will be poured by Sherman Newman Company of Waupaca.

An office building of concrete blocks will be constructed later and will adjoin the factory building. Construction of the units is expected to be started within several weeks and the factory probably will be completed by May.

The company was organized early last month. It will manufacture sensitized surface design safety paper such as is used in bank checks.

Miller Interest Acquire Union Waxed Paper Stock

HAMBURG, N. J. — Complete assets and outstanding stock of the Union Waxed Paper Corporation have been acquired by Bert C. Miller, Inc., and Bert C. Miller has become the new president of the company.

A considerable portion of the Union Waxed manufacturing facilities is devoted to coating and laminating operations for the products of its sister company, the Bert C. Miller, Inc., of this town, which manufactures coatings specializing in the hot melt type, and are pioneers in melt coatings, for which Mr. Miller holds patents.

Bert C. Miller, Inc. also recently has taken over the assets, laboratory equipment, formulae, manufacturing facilities and good will of the hot melt division of the International Printing Ink. The well-known coatings and laminants furnished by International Printing Ink, supplemented by new materials are manufactured, distributed and serviced as previously.

Wall Paper Workers Accept Adjustment

APPLETON, Wis.—Members of the Wall Paper Workers Union of the Fox River Valley have unanimously accepted a wage adjustment amounting to 7 cents an hour for all hourly paid employes at the Atlas mill of Kimberly-Clark Corporation, it was announced January 20. The increase brings the total raise since V-J Day to 27 cents an hour.

There also have been numerous individual job adjustments since V-J Day. Other matters agreed upon cover shift differentials, vacations, sick leave allowances, holidays and insurance coverage. Jerome Zapp headed the union's bargaining committee.

Waste Prices Sag In Midwest Market

CHICAGO—Paper mill representatives who expected the current market tightness to be improved because of the expansion of production, now have turned to a more pessimistic view, according to local reports. Planned expansions, programs for new plants which would have materially helped alleviate the short supply, are reported to be facing real delay. Papermaking machinery is not available in any too great quantity, while the building construction industry's problems are equally discouraging. As a result, local sales offices have relayed the sad news that 1947 won't be much better than 1946, and even though 1947 production will undoubtedly be the greatest on record, the demand will even be greater, and paper making production will not be able to keep pace with it.

An interesting and noteworthy development of the week in Chicago was the decline of $5 a ton in No. 1 news and of $3 a ton in corrugated as made public by mills buying waste paper. The price of No. 1 mixed was reported as holding firm at $20 and dealer buying prices were unchanged. Under the new levels the mills will pay $30 a ton for news and $33 for corrugated, say local sources. Mill operations remain at the same rate as when payments stood at $35 for news and $36 for corrugated, say market observers. The easier prices were said to have come from a heavy flow of waste paper through most of January despite inclement weather. Other waste items held steady.

Training Sessions to Open For Supervisory Employes

WORCESTER, Mass.—Charles J. Hudson, quality control manager at Norton Company, is one of a group of quality control engineers from New England and New York machinery manufacturing plants selected to serve as chairman of a discussion panel at a training program at Federal Products Corporation, Providence, R. I., during the next six weeks.

A factory, rather than a university atmosphere, has been chosen for the meetings because the program is designed to show where innovations in quality control, statistical methods and inspection can be made to pay dividends in production.

Dr. J. M. Juran of New York University and Wallace, Clark Company of New York, and Prof. E. A. Boyan of Massachusetts Institute of Technology, will head management instruction panels.

The conferences are intended for production supervisors, methods of products engineers, chief inspectors and quality control engineers, and will take the form of seminars supplemented by practical demonstrations of new techniques shown.

DR. GERALD WENDT
to Address TAPPI Luncheon

Strathmore Line Shows Range of 64 Colors

WEST SPRINGFIELD, Mass.—A range of 64 colors running from brilliant shades through the lighter many-purpose pastels down to darker hues is featured by Strathmore Paper Co. in its 1946-47 Condensed Handbook recently issued. All colors are consolidated in the Handbook Color Selector, from which is cross-indexed to the line swatches in the Handbook, the complete color range of each line of text and cover paper now being manufactured by the company. Individual line colors are shown by a novelty "paper-patch" treatment developed during the war for paper conservation.

The book groups the company's lines under the headings: Texts and Covers; Vellums & Bristols; and Bonds and Writings. The 22 lines show in sample swatch form 110 different items which include all the standard colors, weights, sizes and finishes in the company's 1946-47 line.

A new hingle in use on the swatches, patented by Strathmore, provides a convenience of use which surpasses that of pre-war sampling. While testing "feel" or "opacity" a Handbook user has simultaneously in full view complete information on sizes and weights in the line as well as colors and finishes.

The limited edition, condensed to conserve paper, is available only through Strathmore distributors.

Wyandotte Promotes Clark

WYANDOTTE, Mich. — Melvin E. Clark, former director of market research in the Wyandotte Chemicals Corporation, has been appointed sales manager for soda ash, caustic soda, and bicarbonate of soda.

Dr. Gerald Wendt to Address TAPPI Lunch

NEW YORK—The feature speaker at the annual luncheon of the Technical Association of the Pulp and Paper Industry to be held at 1 p.m. Thursday, February 27th, at the Commodore Hotel, New York, N. Y., will be Dr. Gerald Wendt, editorial director of Science Illustrated, the new publication of the McGraw-Hill Company which has in a short period built up a list of over 400,000 subscribers.

Dr. Wendt has a unique breadth of experience in scientific research and in the interpretation of science to the public. For the past ten years he has played an outstanding part among American scientists as a writer, editor and lecturer.

He was director of science and education of the New York World's Fair and after the close of the Fair became science editor of Time, Inc. In his earlier years Dr. Wendt was chemist for the United States Bureau of Mines at Denver and during World War I was Captain in the C.W.S. He served as director of research for the Standard Oil Company at Whiting, Indiana, and of the Battelle Memorial Institute for Industrial Research at Columbus, Ohio. For seven years he was Dean of the School of Chemistry and Physics at Pennsylvania State College. He is author of two books "Science for the World of Tomorrow" and "The Atomic Age Opens."

His address at the TAPPI luncheon is "Research Looks Ahead," a subject that will interest everyone responsible for the advance of industry.

College Luncheons at TAPPI Convention

NEW YORK — Three college alumni groups are scheduled to hold luncheons during paper week. The University of Maine luncheon will be held in the Empire Room of the Hotel Lexington on Wednesday, February 26th at 12:30 p.m. Reservations may be made by writing to Enright A. Ellis, Downingtown Manufacturing Company, Downingtown, Pa. The New York State College of Forestry luncheon will be held on Tuesday, February 25th at noon in the South Room of the Hotel Commodore. The Massachusetts Institute of Technology luncheon will be held at noon on Wednesday, February 26th at the Engineer's Club, 32 West 40th Street, New York, N. Y.

Rinear Takes Active Post

NEW YORK—Robert T. Rinear, formerly vice-president of General Precision Equipment Corporation, and for several years a director of Van Reekum Paper, Inc. of New York, has joined the Van Reekum organization as managing partner.

Marathon Stages A Two-Day Meeting

MENASHA, Wis.—Marathon Corporation scheduled a sales organization meeting at the North Shore Golf Club February 11 and 12. About 235 employes, including 85 sales representatives from all parts of the country and 150 members of the staff in the corporation's various plant offices attended. Donald A. Snyder is the director of sales.

The major purpose of the meeting was to acquaint field representatives with the new corporate and sales division organization recently put into operation. The visitors toured the company's Menasha plants, including the new carton manufacturing building now under construction. A special exhibit of the latest developments in packaging machinery was arranged as a feature of the program to demonstrate the company's products, packaging for foods, as actually used by food processor customers.

Program arrangements and features were headed by Owen E. Lyons, advertising manager, and housing, transportation and meal arrangements were directed by Palmer B. McConnell, sales service manager.

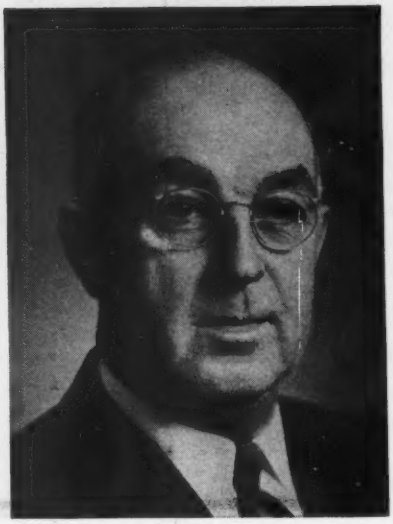
Berkshire Elects Five For Training Program

CHICAGO—Berkshire Papers Inc. has recently inaugurated a training course for paper salesmen. Five men between the ages of 25 and 28 years, with no previous paper experience, have started this course, which will last one year. All of these men are either high school or college graduates, and have all been in the Service, with duty overseas.

Each man will spend a certain amount of time in the various departments of the business, such as the warehouse, the sample room, the city order desk, the inventory department, and so on. Frequent trips will be made to all types of paper mills, and the men will also spend a certain amount of time in all types of printing plants in Chicago.

Rag Bond Mills Grant Across-Board Raise

STEVENS POINT, Wis.—The four rag bond mills of Wisconsin — Whiting-Plover Paper Company, Stevens Point; Fox River Paper Corporation, Appleton; Gilbert Paper Company, Menasha, and Neenah Paper Company, Neenah —operating under a uniform agreement, have completed negotiations with their four respective AFL locals, granting a five-cent hourly increase "across the board." This raised the male base rate from 83 to 88 cents per hour, and the female rate from 71 to 76 cents hourly, both effective February 3. The mills will continue on a 48-hour weekly basis. Increases since V-J day total 23 cents an hour.



S. L. DECARTERET

Vice-President and General Manager, Canadian International Paper Company, Montreal, and wartime Deputy Minister of National Defence for Air, who was named Chairman of the Executive Board of the Canadian Pulp and Paper Association at the closing session of the association's annual meeting in Montreal.

Mooney, Norton, Jackson Are Advanced by Westvaco

NEW YORK—J. A. Mooney, general superintendent since 1945 has been made resident manager of the South Charleston plant of Westvaco Chlorine Products Corporation. Mr. Mooney joined Westvaco in 1932 after eight years with DuPont, and has held various supervisory positions at the South Charleston plant. M. H. Norton, associated with Westvaco in various production capacities since 1927, has simultaneously been promoted to be general superintendent of the South Charleston plant.

Thomas F. Jackson has been appointed resident manager of the Carteret, N. J. plant of which he has been acting manager since February 1946. Joining Westvaco in 1936, Mr. Jackson became production superintendent in 1941 and assistant resident manager in 1944.

Consolidated Plans to Build More Homes

WISCONSIN RAPIDS, Wis. — Consolidated Water Power and Paper Company is planning to erect 26 more homes here by May 1, and has requested the common council for sewer and water extensions. The company has ten of the prefabricated homes nearing completion. To expedite the work Consolidated would prepare the excavations and backfill and the city install the pipe, with the company offering to procure the materials at prices satisfactory to the city, if the latter could not obtain them in time.

Westvaco Hikes Pay At Charleston Mill

CHARLESTON, S. C.—A new contract between the West Virginia Pulp & Paper Company and four unions representing employes of the Charleston plant, was signed here last week. A spokesman for the union organization said the agreement is for a period extending to June 30 and provides for a general wage increase of five cents an hour for more than 1,000 workers.

Three of the unions involved were AFL and one was independent. Negotiations have been going on since last June 30. Satisfaction over the results was expressed both by Theodore A. Cook, manager of the Charleston plant, and C. A. Attwood, chairman of the joint union negotiating committee.

"In addition to the general wage increase," it was declared, "the negotiations resulted in wage adjustments on a number of jobs, an additional paid holiday for all employes and several contract adjustments.

"The common labor rate of 90 cents an hour now paid by the company is the highest in the Southern paper industry. Skilled craftsmen rates range to more than $2 an hour under the new contract.

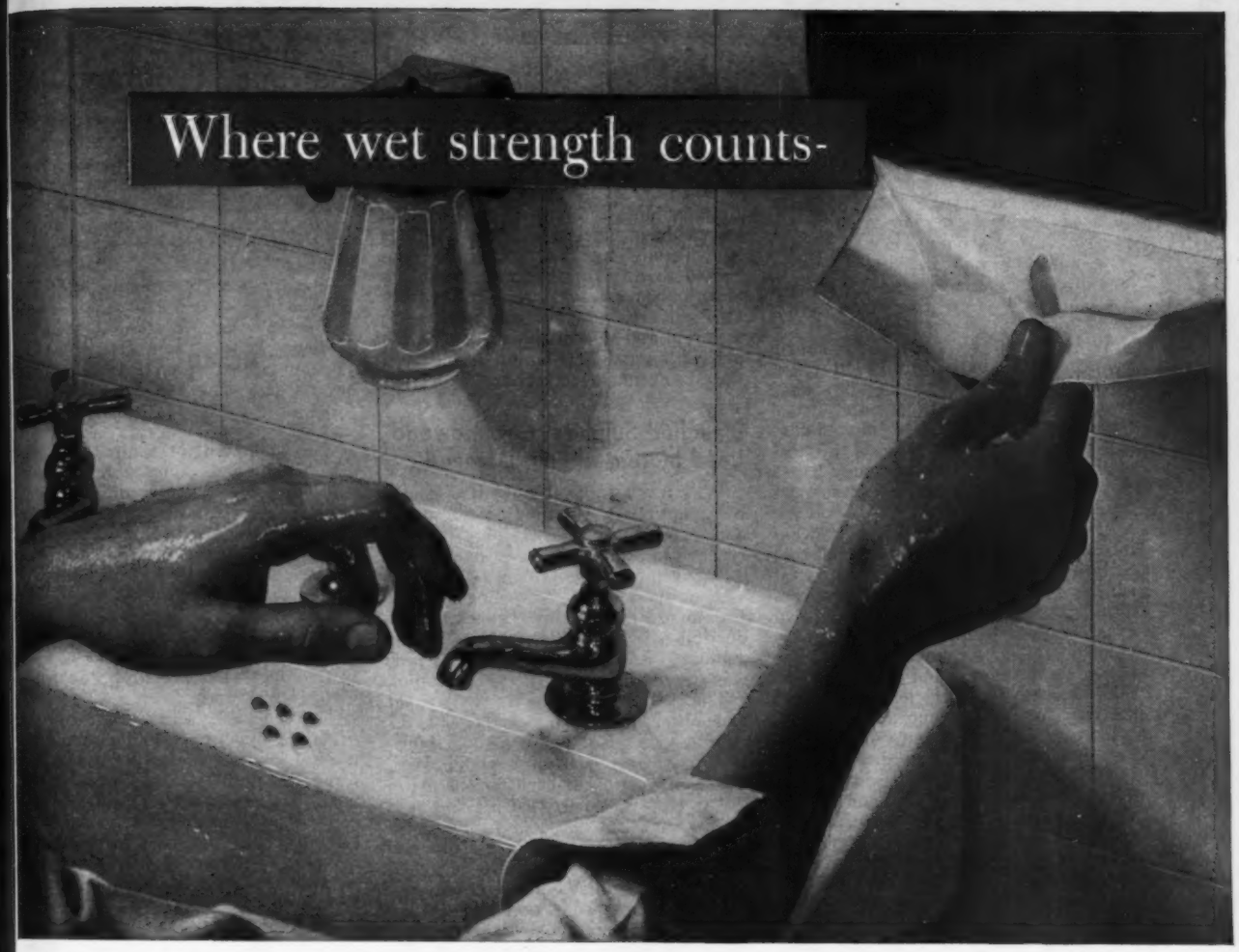
"Under the holiday agreement, all hourly paid employes not working on Independence Day, Labor Day, Christmas Eve and Christmas Day receive eight hours pay at straight time. Employes who work on these holidays receive premium pay of time and a half in addition to the straight pay. Those who work on New Year's and Thanksgiving are paid at the rate of time and half."

Among those taking part in the negotiations were W. M. Bruckner, of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers (AFL); John L. Owens, of the International Brotherhood of Paper Workers (AFL); Michael Kryvicky and John R. Eggleston, of the International Association of Machinists (Independent), and C. E. Vick and E. F. Hayes, of the International Brotherhood of Electrical Workers (AFL). In addition, several national representatives of the unions were present.

Resume Tree Plantings On Vancouver Island

VANCOUVER, B. C.—Inaugurating its reforestation program for this year, the British Columbia Forest Service has started on the planting of 345 million red cedar trees and Douglas Fir seedlings in the Horne Lake and Campbell River area on Vancouver Island. The Forest Service has arranged through the National Employment Service to engage labor.

The seedlings being planted are four-year-olds left over from stock which should have been planted in 1945 but which had to remain in the nursery because labor was not available.



–count on UFORMITES 467 and 470 for an effective, economical job

In paper toweling—and wherever wet strength is of prime importance—UFORMITE 467 and UFORMITE 470 are especially valuable. These urea formaldehyde resins increase wet strength substantially . . . and do it efficiently and economically.

UFORMITE 467 is particularly designed for use with Kraft by beater addition. UFORMITE 470 is recommended especially for sulfite stocks, can also be used advantageously with Kraft, rag and groundwood stocks, in the manufacture of high wet strength glassine, wrapping paper, chart and ledger paper or light weight absorbent tissues.

You can easily add these urea formaldehyde resins to your present manufacturing process . . . with no major change in your operating procedure. And—with no pretreatment, no special handling, no extra steps—as little as 1% resin solids on dry fibre weight will increase your paper wet strength as much as 300%!

And UFORMITES 467 and 470 do more than give you higher wet strength—they improve dry tensile and Mullen, fold, uniformity of sizing, and coating surface characteristics. Why not look into the many benefits resulting from these resins? We will be glad to send full details on request.

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THE RESINOUS PRODUCTS & CHEMICAL COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Powell River Starts Its Hydraulic Barker

VANCOUVER, B. C.—Plans for perfection of the Powell River Company's new hydraulic barker which sheared its first log by this water pressure process on December 28, are now under way. Plant engineers are working to obtain the highest degree of efficiency from the wood-saving mechanism.

When completed and in full-scale operation, the barker mill will effect an annual saving of 20 million board feet, sufficient to manufacture 40,000 tons of newsprint. It is estimated that the pulpwood saved in 1947 by this method will be enough to supply paper for all British Columbia newspapers until 1949.

The barker, which officially went into operation when president Harold S. Foley pulled the levers for the trial run, is part of a long-range program by the Powell River Company. Drawn up six years ago, the plan was to provide post-war employment, conserve forest resources, expand paper production, increase plant efficiency and pave the way for new products.

Planned by the company's engineering division, under the direction of H. Moorhead, the mechanical parts were put out in Vancouver and assembled at the mill. The week before the opening ceremony, mill employees worked furiously to get the unit ready for operation.

The equipment, which will have a capacity to produce from 10 to 12 percent more newsprint from the same quantity of raw materials, will handle logs ranging from five inches to six feet in diameter. The logs revolve slowly in the huge enclosure while a sharp-edged jet of water plays upon them, moving back and forth at the rate of 40 feet per second. A pressure of 1,350 pound strips the logs of bark in slightly more than 30 seconds. The bark is salvaged for use as fuel in the steam plant. A bridge and belt conveyor system, 650 feet in length, will connect the new barker plant with the pulp mill section.

Wood saved by the new barker will feed the mill for three days, while the bark saving will assist in a subsequent project for production of by-products from bark and waste.

In starting the barker, Mr. Foley congratulated all those whose work had made this undertaking possible. As one more major step in company expansion, the wood-conservation device will assure Powell River's place as the largest single unit pulp and paper plant in North America.

McGarry Visits Jobber Contacts

CHICAGO—M. E. McGarry, territory sales representative of the Eastern Corporation has been traveling extensively during the past month, participating in the annual advertising and sales promotions campaign tour under the direction of John Massengale, Eastern's vice-president in charge of sales. Mr. McGarry attended such conferences during January in Detroit, Chicago, Minneapolis and St. Paul, Des Moines, Omaha and Denver, and plans to go to Wichita, Kansas, Kansas City, Indianapolis and other mid-western points during February. The meetings held throughout the country are designed to acquaint Eastern merchants and jobber salesmen of the Eastern 1947 advertising and sales promotion program and to acquaint them with the production and distribution problems of the Maine manufacturers.

Bleached Sulphite, Groundwood, Lead Increased Pulp Demand

WASHINGTON, D. C.—United States consumption of wood pulp in the paper and paperboard industry during 1946 reached an all-time high, as the industry reported a total consumption of 12.1 million tons, according to the Bureau of the Census. Domestic production of all kinds of wood pulp amounted to 10.6 million tons, which was exceeded by only the 1942 output.

The 1946 consumption of waste paper and other fibrous materials was 8.7 million tons, an increase of 537 thousand tons over consumption in 1945. The consumption of each fibrous material except rags increased in 1946 over 1945.

The most important increase in wood pulp production occurred in bleached sulphite and groundwood. The only decrease in pulp production was in unbleached sulphite. The largest consumption increases occurred in the kinds of wood pulp which were imported in the greatest quantity in 1946, particularly in bleached and unbleached sulphite and unbleached sulphate.

Superintendents at Wausau Hear of Product Control

WAUSAU, Wis.—Maintenance of improved quality with maximum production was the keynote of a talk on "Controlling Papermill Production," given by B. H. Maycock, Appleton, midwest representative of the Thompson and Lichtner Company, Boston, Mass., before a meeting of the Northwestern division of the American Pulp and Papermill Superintendents' Association Friday evening, January 31.

Mr. Maycock said that it is necessary to eliminate as many "unknowns" from the process of paper manufacture as possible in order to insure uniform quality with maximum production.

A floor discussion followed. Forty-six persons attended. R. A. Nugent, of the Nekoosa-Edwards Paper Company, Nekoosa, presided.

A motion picture supplied by the Curtis Publishing Company was presented, showing the production of its various journals from the cutting of trees for paper manufacture to the ultimate arrival of the publications in the homes.

Set Busy Program On Stream Improvement

NEW YORK—The National Council for Stream Improvement annual meeting of members to be held at the Waldorf Astoria, on February 25, will open at 2:00 p.m. with a business meeting. This will be followed by a symposium of stream sanitation. Speakers will be Morris M. Cohn, Editor, Sewage Works Engineering; William Wise, Chief Engineer, Connecticut State Water Commission; and Dr. Willem Rudolfs, Director, Department of Sanitation, Rutgers University.

Mr. Cohn will present an historical review and will summarize the public and private equities and legislative problems involved in stream sanitation. Mr. Wise will outline the operation of a well-conceived state program of stream sanitation using the State of Connecticut as an example. Dr. Rudolfs will review industry interests in water usages and present an outline of what can be expected in the future in respect to pollution abatement through research.

The speakers selected are all men of broad experience and national reputation in their respective fields. Their representation of sound thinking and modern concepts in relation to stream control problems should present those attending the meeting with a clear picture of the overall situation and the requirements for a sound industrial approach necessary for its solution.

National Blank Book Celebrates Quarter-Century in Chicago

CHICAGO—The western division of the National Blank Book Company, now beginning its twenty-sixth year, occupies 34,000 square feet of floor space at 209 S. Jefferson Street, as compared to the 8000 square feet which housed the division back in 1921. The company now occupies a part of the building which permits future expansion to a total of 65,000 square feet. The third floor of the building is to be available for National use by this Spring. W. Brewster Towne is in charge of the Western Division operations, having both plant management and sales executive duties under his direction.

Inland Press Meets

CHICAGO — The Inland Daily Press Association held its mid-winter meeting at the Congress Hotel in Chicago on February 10 and 11. Important in the agenda for the two-day meeting was the subject of newsprint, with John W. Potter, chairman of the Association's Newsprint Committee, as moderator of a special session devoted to this subject. Mr. Potter, who is publisher of the Rock Island Argus, also reported on Committee activities.

AND HERE ARE THREE CASE HISTORIES TO HELP YOUR INVESTIGATION:

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MICHIGAN MILL RUNNING BOARD: *"Bottom felt ran 3 weeks. Good for 4th week. Taken off to change two molds."*

EASTERN SULPHITE PULP MILL: *"The two treated felts produced better than 40% more pulp than regular felts."*

PROMINENT MILL ON TISSUE: *"One felt ran 5½ days, another 5 days, a third on 5 days and still in good shape."* Mill says average felt life only 2½ to 3½ days heretofore.

Therein you have a sample of the reports on file—hundreds of them—and they're available.

So much for wear. Now for some other points . . . the "put-on," the start-up, porosity, stretch, shrinkage, shower water, suction, etc. They're all covered time and time again in these reports.

Naturally you are interested in any felt that will do the job equally well or better and still save you important money. You are, therefore, urged not to discount these statements as just some exaggerated felt claims, but to investigate ORR-CHEM felts at once.

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ORR FELTS

FINANCE

Rhinelander Sells Block of Common

RHINELANDER, Wis. — Thirty thousand shares of common stock of the Rhinelander Paper Company have been sold to a group of Mid-Western investors in the projected expansion program which was reported recently by Folke Becker, president of the company, in his annual report to stockholders.

This stock is part of the 300,000 shares of authorized $10 par value common stock and brings the number of outstanding shares to 195,000. When the annual report was issued, the balance sheet showed 150,000 shares outstanding on September 30, 1946. A 10 percent stock dividend was paid December 1st, bringing the total to 165,000 shares at that time.

The company also reported that all of the bank loans have been paid off since the end of the fiscal year. The September 30 balance sheet showed bank loans of $845,000.

Rhinelander Paper is a major producer of glassine and greaseproof paper, with about 95 percent of production going into protective food packaging for large nationally-known processors and merchandisers of food products.

In the latest fiscal year, net earnings were $782,510, equal to $5.22 a share on the common stock, which is the only issue of the company. Net sales were $7,483,051. Dividends amounted to $2 a share, compared with $1 a share in each of the three proceeding years.

Last year the company embarked on an expansion program which was authorized by stockholders May 21. This program includes the installation of new machinery, and a number of other plant replacements and improvements.

"This expansion project," said Becker, "particularly the addition of another large, efficient paper making unit, will not only help to maintain our established position of leadership in the glassine and greaseproof industry, but will be the means of taking care of the substantially increased demand for our types of protective packaging papers at a comparatively low cost of production.

"The cost of the expansion and improvement program, together with additional working capital needs, including the requirements of the joint Rhinelander-Marathon Canadian woods operation, is estimated at approximately $4 million," Becker added.

Rhinelander and the Marathon Corporation, of Rothschild, secured a large timber concession, known as the Nagagami Concession, in Ontario, in 1943. This concession, supplemented by the company's own Canadian operation, is already a major source of supply for pulpwood. These two operations provided Rhinelander with 43,000 cords of spruce pulpwood last year.

The September 30th balance sheet showed total current assets of $4,235,315, including $576,327 in cash and $1,051,186 in Treasury obligations, and total current liabilities of $810,013. Total assets were $9,052,647.

Ohio and Hankins Join in New Board Plant Financing

HARTSVILLE, S. C.—A $1.3 million plant will be established here to produce corrugated board exclusively for two large Ohio concerns, according to an announcement by James L. Coker, president of Sonoco Products Company.

"The Ohio Boxboard Company, of Rittman, and the Hankins Container Company, of Cleveland, have agreed to advance one-third each of costs of the mill and machinery and take full output worth some $2 million a year," Mr. Coker said. He added that the Hartsville plant is expected to begin daily output of 80 tons of 00.9 inch board by next October.

According to present plans, approximately forty new workers will be hired on three shifts. Gum wood pulp, mostly of local origin, will be used.

Great Lakes Directors Consider Financing

TORONTO, Ont.—It is understood directors of Great Lakes Paper Company are considering details of a capital reorganization of the company, according to Canadian Dow Jones, who says: "The purpose of the reorganization will be the elimination of the Class 'A' preference shares. While the management have not decided on the exact details of procedure, it is expected that preferred shares will be offered $50 in cash and a common equity, probably equal to one present common share. There is also the possibility that the common stock will be subdivided. The return to preferred shareholders will in any event almost certainly be about the equivalent of $80 a share."

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending February 8, 1947

STOCKS

	High	Low	Last
A. P. W.	5⅞	5¼	5⅜
Armstrong Cork Co.	52¼	50	51¾
Celotex Corp.	31½	30¼	31½
Celotex Corp., pf.	21	20⅞	21
Certain-Teed Products Corp.	20	19	20
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	26	23½	26
Champion Paper & Fibre Co., pf.	110½	109	110½
Congoleum Nairn Co.	30¾	29¼	30½
Container Corp. of America	46¾	43½	46¾
Crown-Zellerbach Co.	31¾	30¼	31⅝
Crown-Zellerbach Co., pf. 4 20	107½	107⅛	107½
Dixie Cup Co.	34	32	33¼
Dixie Cup Co.—A	54	52¾	54
Flintkote Co.	36½	34¼	36⅜
Flintkote Co., pf.	107½	106¼	107½
Robert Gair	8¼	7⅜	8
Robert Gair, pf.	20⅝	20	20½
International Paper Co.	51⅜	49	51¼
International Paper Co., pf.	105	104	105
Johns-Manville Corp.	136½	134	136½
Johns-Manville Corp., pf.	123¾	123¼	123¾
Kimberly-Clark Corp.	27	24½	27
Mac Andrews & Forbes	38¼	38⅛	38¼
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	27⅛	26½	27
Masonite Corp.	60½	58½	60
Mead Corp.	22½	20⅞	22
Mead Corp., pf. 4¼	104¼	104¾	104¾
Mead Corp., pf. 2	49½	48	49½
National Container Corp.	40	38⅛	40
Paraffine Companies, Inc.	77½	76	77½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	25¼	22¼	25¼
Rayonier, Inc., pf.	37½	36	37½
Ruberoid Co.	56½	55⅞	56½
Scott Paper Co.	46	45½	46
Scott Paper Co., pf.	99½	99¼	99½
Sutherland Paper Co.	45½	43	45½
Union Bag & Paper Corp.	33	31¼	32⅞
United Paperboard Co.	14½	13	14⅜
U. S. Gypsum Co.	106½	100¼	106½
U. S. Gypsum Co., pf.	190	190	190
West Virginia Pulp & Paper Co.	40¼	39½	40
West Virginia Pulp & Paper Co., pf.	115¾	110	113

BONDS

	High	Low	Last
Abitibi Pulp & Paper Co. 5s '53	....	....	....
Celotex Corp. 3¾s '60	103⅞	103⅞	103⅞
Certain-Teed Products Corp. 5½s '53	....	....	....
Champion Paper & Fibre Co. 3s '65	104	104	104
Mead Corp. 3s '66	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending February 8, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	43	41½	43
Hummel Ross Fibre Corp.	32¼	30½	32¼
St. Regis Paper Co.	10¾	9½	10¾
Taggart Corp.	8⅞	8½	8⅞

BONDS

	High	Low	Last
American Writing Paper Co. 6s '61	....	....	....

P.M. 32 POWDER

Bactericide and Fungicide

ODORLESS-NON-CORROSIVE-SAFE SOLUBLE

CONTROLS SLIME

Specifically developed for the pulp and paper industry, "PM 32 Powder" is completely effective in both Acid and Alkaline systems. **Only ½ to 1 ounce** of this powerful disinfectant per ton of stock, dry basis, is usually sufficient to control slime-forming micro-organisms in a pulp or paper system. Eliminates odor-forming Sulphur Bacteria.

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FALLS CHEMICAL PRODUCTS COMPANY

OCONTO FALLS, WISCONSIN

Allis-Chalmers Line Shows Improvement

MILWAUKEE—Allis-Chalmers reports significant progress in development and design work on most of the company's highly diversified lines of industrial products furnished the pulp and paper industry, despite a curtailment in actual production through most of 1946 due to labor difficulties, according to the firm's latest annual engineering Review to be released soon.

Described in the Review as being in successful operation is the new Allis-Chalmers Hi-Density feeder in combination with the PW pump. "This combination permits handling high consistence paper stock, and saves steam, chemicals and thickening devices in stock transfer. It also permits changes in processes which save capital investment, improve quality and eliminate manufacture of wet lap for thickening in beater. Pulps up to eight percent bone dry consistence are being successfully handled and in one installation up to 9.7 percent consistence sulphite is being handled from the thickener to the bleach retention tower," the Review states.

A new process pump has its stuffing box on the suction side and is equipped with readily renewable wearing parts which can be made of special materials, adapting it particularly to the handling of black liquors in sulphate pulpings.

In the category of power generation, the trend is toward increased use of alloy steel casings in boiler feed pumps, the Review points out, while an increased use of vertical-shaft, column-type mixed flow pumps for condenser circulating service is being evidenced. Design work has been completed on 11 different sizes of these pumps, seven of which are already in production.

Pulp and paper mills cooperated with other industries in furnishing data for analyses of steam turbine blade deposits by X-ray diffraction during the year and from this information a relationship between the temperature at the point of deposition and the compounds occurring in deposits has been found, the Review relates. The study is to be continued throughout 1947 and plants operating steam turbines at 350 pounds pressure or higher are urged to submit samples together with pertinent information for which data sheets are available.

Because of their flexibility and attractive appearance, unit substations are being employed in the reconversion and expansion plans of a number of paper mills. The new vertical-lift, air-blast circuit breaker is finding increased application in industrial installations and tunnel-type duplex switchboards are in current production for industrial power plants where a separate control board is desired, according to the Review.

The Review also reports that an industrial control trend toward full automatic operation and complete factory assembled metal enclosures called for development of a new 5-kv, 200-ampere oilless motor starting contactor, a new line of heavy-duty d-c contactors up to 2,500 amperes, 750 volts, and a new rotating power factor regulator.

Also announced in 1946 was a new line of heavy-duty push-button stations for motor starters, complete in both surface mounting cases and flush-panel mounting with maintaining and momentary contact arrangements.

Waste Prices Hit Top In Western New York

BUFFALO, N. Y. — Prices offered by waste-paper dealers to householders for old newspapers and those paid by the manufacturers which use the paper in their plant operations have hit the highest level in years. It was estimated that the prices are about 33 percent higher than the old OPA ceilings which were removed in November. Old magazine prices also have jumped.

Large scrap-paper dealers said the "going" price being paid by mills for large bales of paper has hit about $29 a ton, or about $9 more than the old ceiling. Several dealers are offering householders between $1 and $1.20 for 100 pounds of old newspapers. Some of these dealers sell their purchased paper to a larger dealer, who bales it and in turn sells it to the mills. About three weeks ago, dealers offered between 80 and 90 cents a hundred pounds for old newspapers.

One spokesman said there normally is a seasonal increase in wastepaper prices at this time of the year because the weather slows down collections. He said he believes the price is at or near its peak and will drop when housewives begin spring cleaning.

Ice Jams Stop Water In Niagara River

NIAGARA FALLS, N. Y. — Lack of water due to ice jams in the upper Niagara River has hampered the International Paper Company which uses nine million gallons a day for process work in converting raw materials to paper. All production workers at the company were dismissed recently because of the decrease in available water, but ice breaking operations of the Niagara Falls Power Company enabled the International to resume production the following day.

The plant uses a large volume of water for bleaching, washing and defibering. The ice jams in the upper river are unusual for this time of the year and have resulted in a complete drying up of the American Falls.

Interest Runs High In Packaging Exposition

CHICAGO—A considerable number of local companies are planning to participate in the annual Packaging Exposition to be held in Philadelphia, April 8 to 11. These concerns will not only participate in the exposition but also in the conferences on packaging, packing and shipping. It is expected that the convention will again get back to the emphasis on style and package materials after some lean war years which have given the package a necessarily conventional style and appearance.

Included among the members of the advisory committee planning the convention are Frank Biederman, Kimberly-Clark Corporation; H. H. Jones, Kalamazoo Vegetable Parchment Company; and Paul Thompson, of the Sherman Paper Products Corporation. Other members are J. M. Cowan, Dobeckmun Company; R. E. Hansen, Milprint, Inc., and Paul Meelfeld, Hinde & Dauch Paper Company.

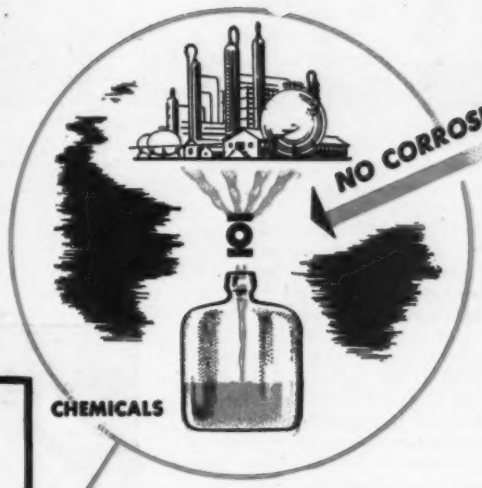
Associates Fete Coughlin On His Anniversary

HARTFORD, Conn. — John N. Coughlin, head of the engraving department of Plimpton Manufacturing Company, division of the United States Envelope Company, was guest of honor at a banquet given by 28 of his business associates last Wednesday night on the 50th anniversary of his employment with the company.

He joined the firm on January 22, 1897, and the following year the company was taken over by the United States Envelope Company. The oldest employee in point of service in the division, he was 15 years old when he went to work. He was given a desk set by Robert D. Allison, district manager, who termed him "one of the finest hand engravers in the country today."

Chicago Paper Association Reelects Officers

CHICAGO — Officers of the Chicago Paper Association were elected recently by the group which held its annual meeting at the Bismarck Hotel on January 14. Robert E. Knox, Knox & Schneider, was re-elected president. Also re-elected were: William Chukerman, J. Chukerman & Sons, first vice-president; Louis P. Brown, Atlas Paper Company, second vice-president; William J. Shapland, Fred Rentz Paper Company, treasurer; and John W. Richey, executive secretary. S. S. Weil of Joseph Weil & Sons, was re-elected chairman of the board. Others to again represent the membership on the board are Leo Altholz, Inlander, Steindler Paper Company, and Walter Schulman, Levin Brothers Paper Company. The only new addition to the official slate was Herbert Puschek, General Shippers Supply Co.



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- ★ ISOLATED WORKING PARTS
- ★ CORROSION-PROOF LININGS
- ★ STREAMLINED FLOW

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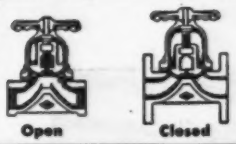
● The flexible diaphragm isolates the working parts of the valve from the fluid, preventing contamination, and permits streamlined flow plus positive closure even with suspended solids.

A selection of diaphragm materials and also body linings of glass, porcelain, lead, rubber or synthetics protects against corrosion.



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WHENEVER PIPING IS INVOLVED

Hollingsworth & Whitney Adopt Portable Woods Housing Units

BOSTON — Now, Hollingsworth & Whitney, paper manufacturers, have made provision for comforts, previously unknown in northeastern logging camps, through the construction of portable units. Their new camp buildings provide such modern accommodations as are usually found only in towns and cities.

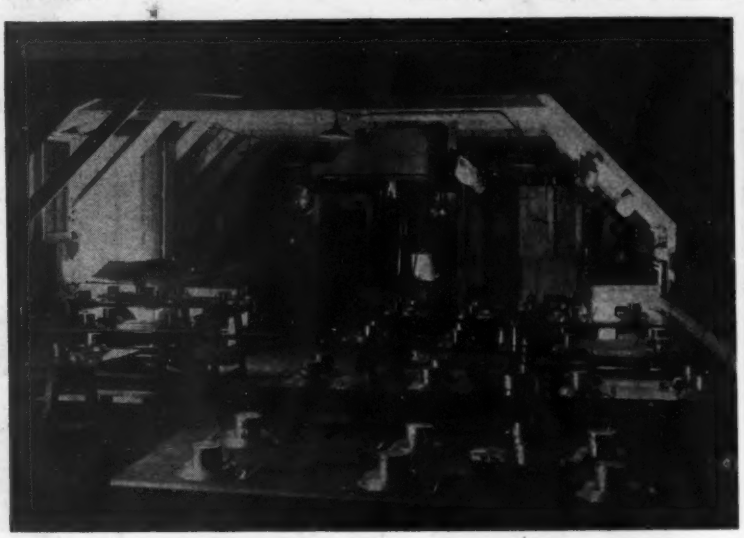
A 10-KW electric generator furnishes current for lights in all buildings and camp yards, plus the operation of power tools. Hot and cold running water is available in each housing unit and in the kitchen. A separate laundry and shower room is equipped with set-tubs and shower stalls. And a sanitary, heated latrine is an additional unusual feature.

The sleeping quarters offer modern, individual accommodations. Army type double-deck bunks, equipped with mattresses, clean blankets and pillows provide sleeping comforts not usually found on woods operations. A maximum of 32 men occupy each such building.

The combined cookhouse and dining room is plannedf or efficient storage, preparation and serving of the best food obtainable. Each dining table seats 8 men comfortably.

Provision has been made for employees to work with maximum efficiency. The repair and maintenance garages have proper lighting and adequate storage for tools and equipment. The saw filers quarters, located in the building housing the electric generator have broad windows, and ample work benches.

Hollingsworth & Whitney now have in operation four of these portable units! Designed to meet the needs of logging operations in the northeastern area, these camps are the last word in modern, comfortable, convenient woodsmen's housing. As planned by the Engineering firm of Fay, Spofford & Thorndike of Boston, these buildings can be taken down and re-erected by a few men at a new site on any arrangement which may suit the needs of the location.



In the combined cookhouse and dining room, woodsmen find all the comforts of home.

Interior view of sleeping quarters of Hollingsworth and Whitney's new logging camps designed especially for operations in Maine.

Marathon Finds Lignin Suitable for Buna-S

WAUSAU, Wis.—"Synthetic Rubber Products and Their Properties" was the topic of Willard Stinger, a chemist at Marathon Corporation, Rothschild, on January 27, in a talk before the Kiwanis Club here. He demonstrated how lignin salvaged from wood pulp at the corporation's paper mill at Rothschild is being used to give buna-S, a synthetic substitute for rubber, greater value.

He described five synthetic forms—neoprene, butyl, thiokol, buna-S and buna-N—and explained that some of these have qualities superior to natural rubber, but that none has all the qualities of the natural product.

Buna-S, he said, can be manufactured for a minimum of 18 cents per pound, which compares favorably with the average price of natural rubber. He urged continuation of the synthetic rubber industry for security in the event of another war and as a safeguard in the event of excessive prices for natural rubber.

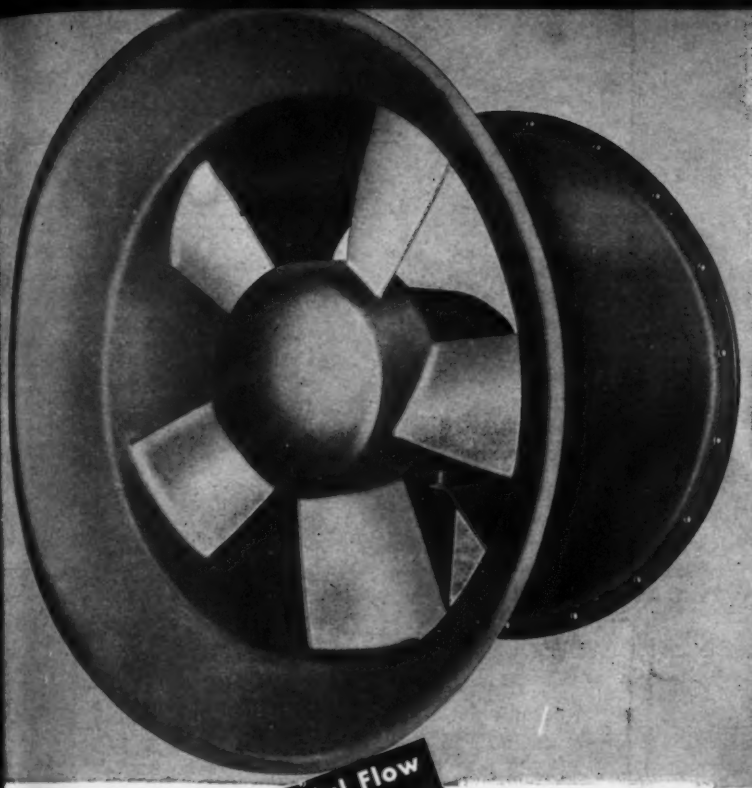
Use of lignin instead of the original use of carbon black as a reinforcement for buna-S, Mr. Stinger said, has made it possible to produce the reinforced buna-S in a relatively wide color range.

He declared that within the next year Marathon expects to make some marked progress in the development of the lignin reinforcement for buna-S.

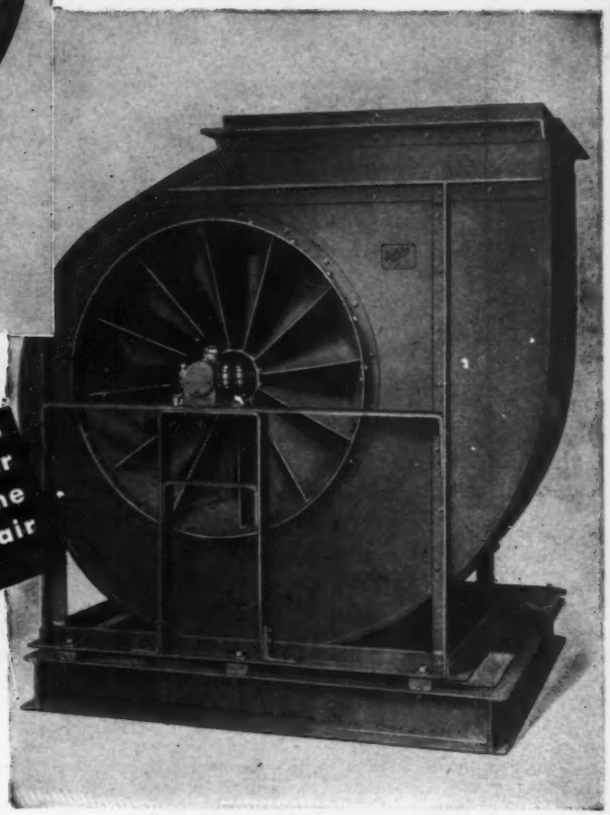
Hollingsworth & Whitney Pays Dividends

BOSTON—Directors of Hollingsworth & Whitney Company declared a regular quarterly dividend of $1 a share on the $4 cumulative preferred stock, payable April 1, to stock of record March 15. Directors also declared a regular quarterly dividend of 25 cents a share on the common, payable March 12 to stock of record Mar. 1.

Each has its place



top — Buffalo Axial Flow Fans are available in a complete range of sizes, direct connected and belt driven.



bottom — Buffalo "LL" Fans are for ventilating, air conditioning and some types of industrial air handling.

• When you select a fan for ventilating, cooling, exhausting, or, in fact, any commercial or industrial service, by all means pick the fan which will give the best performance on THAT particular job.

The relatively new axial flow fan meets many special installation requirements; it is ideal for some of these.

It should not, however, replace the centrifugal fan for many other installations.

A safe general rule to follow is this: Axials are satisfactory for low pressure service in air conditioning, ventilating, quick-freezing processes and some industrial work.

Where duct systems require elbows or bad connections near the fan inlet or outlet, or where pressures above 5" or 6" static are encountered, or where heavily dust-laden air is handled, a centrifugal fan will usually give better performance.

Buffalo builds both Axial Flow and Centrifugal Fans. Buffalo Sales Representatives located in principal cities, are thus free to recommend the type and style which will give you most efficient service.

BUFFALO FORGE COMPANY

159 MORTIMER STREET **BUFFALO, N. Y.**

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo" **FANS for Industry**

Close-Coupler Vertical Pumps Featured in New Bulletin

Los Angeles—A new, 20-page bulletin "Peerless Vertical Close Coupled Turbine Pumps," has been prepared by the Peerless Pump Division, Food Machinery Corporation, of this city. It is devoted in its entirety to describing and illustrating the specialized application of Peerless Turbine Pumps to industrial, municipal, engineering and agricultural installations where short pump settings are encountered and where there is a strong necessity for deep well turbine pump power and capacity in these applications.

In general these pumps employ, for close coupled applications, a shortened shaft and pump column with the necessary number of bowls and impellers to permit use in installation with short settings, such as pits, sumps, collecting basins, reservoirs, sloughs, rivers, lakes, marshes, etc.

The bulletin is illustrated with cutaway views of the pump, schematic diagrams of suggested methods of pump installation in various services, in addition to installation photographs of these pumps in a wide variety of industrial applications. Details of pump engineering, construction and operation are also fully described and illustrated.

Dodge Offers New Ball Bearing Flange Unit

Mishawaka, Ind. — A new Ball Bearing Flange Unit known as the SC Ball Bearing Flange Bearing is now in production at the Dodge Manufacturing Corporation of Mishawaka, Indiana.

This bearing is fully self-aligning, has deep groove precision ball bearing with long inner race, improved labyrinth seals and is suitable for mounting against vertical or horizontal frames and supports. The back face of housing is machined and filling slots are also at back which provides added protection against external dust and dirt.

This bearing is an addition to a complete new line of Ball Bearings available in Pillow Blocks, Hanger Bearings, Take-up and Cylindrical Units as well as in Steel Frame Ball Bearing Take-ups.

Pacific Mills Hotel to Be Ready for August Use

Vancouver, B. C. — Pacific Mills Ltd. expects construction of its new 265-room hotel at Ocean Falls, B.C., will be completed by the beginning of August. The seven-story hotel, to be named Martin Inn in honor of the late A. B. Martin, onetime Pacific Mills president, will be the fourth largest in British Columbia.

In addition to catering to tourists and other transient guests, it will provide residential accommodations for more than three hundred paper mill employees.

Of fireproof construction throughout, the hotel building will include a dining room and cafeteria, games rooms, tavern, beauty parlor, barber shop and billiard hall. A banquet room, lounge and patio will provide facilities for community social activities.

Andrews Is Advanced To Vice-Presidency

New York—Charles M. Andrews, who started working for E. P. Lawson Company in 1930 as office boy at the age of 18, has just been appointed a vice-president. Mr. Andrews will continue to handle the sale of Lawson Cutters and other products throughout the lower part of New England, Westchester County and Metropolitan New York, with his headquarters at the Lawson New York office.

Before joining Lawson, Mr. Andrews worked for an employment agency soliciting business by telephone. Upon calling the Lawson company, he learned of an opening for an office boy, applied for the job himself, and was hired by David W. Schulkind, then vice-president under E. P. Lawson who founded the company 49 years ago.

Credit Unions Elect

Wisconsin Rapids, Wis.—Lawrence Villeneuve was elected president of the Bull's-Eye Credit Union, which serves employes at the Wisconsin Rapids division of the Consolidated Water Power and Paper Company. The union now has a total of 2,138 members. It made 1,086 personal loans to its members, totaling $112,530.56, during the last year. Real estate loans totaled $83,081.74. Total assets amount to $319,831.32.

Neenah, Wis. — William Schmidt has been elected president of the Neenah Foundry Credit Union. The union is making plans for a Winnebago county credit union chapter meeting February 17 for which it will be host.

OBITUARY

John A. Aull, Sr.

Middletown, Ohio—John A. Aull, Sr., chairman of the Board of the Sorg Paper Company and prominent in the city's civic, and social life for nearly forty years, died February 1 at 11:25 a.m. at Middletown Hospital. He was 76 on January 29.

In addition to the widow, Mrs. Elizabeth H. Aull, he is survived by one son, John A. Aull, Jr., one daughter, Mrs. Donald G. Driscoll; a brother, Charles E. Aull; a sister, Mrs. R. W. Brixey of New York City, and several grandchildren.

With his election as director of the Sorg Paper Company on January 7, 1908, Mr. Aull came here. He later became vice-president of the Sorg Company, and following the death of his brother-in-law, Paul A. Sorg, Mr. Aull was elected president on February 24, 1914.

During the years he served as the head of the company, its production facilities and business expanded consistently. When he first became associated with the concern the annual production of paper was 4,500 tons.

In 1917 the company purchased the W. B. Oglesby Paper Company, and in 1923 the Frank Smith mill was added to production facilities. In 1924 Mr. Aull supervised the organization of the Paul A. Sorg Realty Company, and in another expansion move the concern built its $1,000,000 power plant.

In the interim Mr. Aull became president and director of all subsidiaries of the company which were merged in 1931 to form the Sorg Paper Company. Continuing the company's expansion, he and his associates in 1941 purchased a pulp and paper mill at Port Mellon, B. C.

James Weir

Springfield, Mass.—James Weir, 60, assistant treasurer and secretary of the United States Envelope company, died at the wheel of his automobile early on the evening of January 25th, while driving to a friend's home.

A companion stopped the car when Weir slumped over the wheel and avoided a crash into a parked automobile. Weir, a long-time employee of the envelope company, was widely known in the paper industry. He is survived by his widow and three brothers.

Clarence Bredendick

Neenah, Wis.—Clarence Bredendick, 41, died suddenly early Tuesday morning, January 28, at his home here. He was employed by the Fort Howard Paper Company, Green Bay, Wis., as an engineer. Before entering industry he taught in Neenah High school. His wife, a daughter and a son survive.

For trouble-free flow control ..... install POWELL Valves

There are at least two notable reasons why Powell Valves minimize flow control troubles. One is that every valve in the Powell Line has been scientifically designed to operate under certain specific flow control conditions—pressure, temperature and/or media. The other is that there's a Powell Valve for *every* operating condition, or set of conditions, known today.

That's why so many plants, representing every phase of modern industry, are now standardizing on Powell Valves.

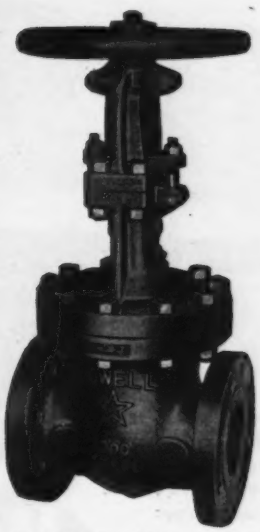


Fig. 3003—Class 300-pound Cast Steel Gate Valve with bolted flanged yoke, outside screw rising stem and taper wedge solid disc.

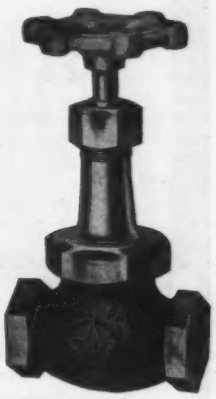


Fig. 1708—200-pound Bronze Globe Valve with screwed ends, union bonnet, renewable, specially heat treated stainless steel seat and regrindable, renewable, wear-resisting "Powellium" nickel-bronze disc.

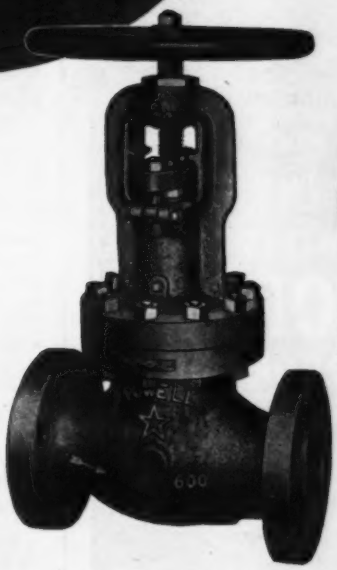


Fig. 6031—Class 600-pound Cast Steel Globe Valve. Has flanged ends, outside screw rising stem and bolted flanged yoke.

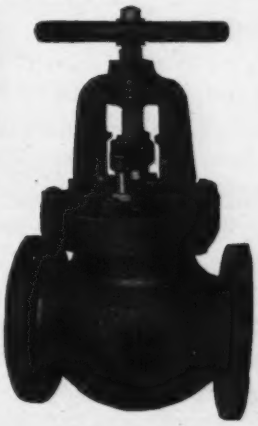


Fig. 241—125-pound Iron Body Bronze Mounted Globe Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke, and regrindable, renewable bronze seat and disc. Also available in All Iron.

Fig. 1793—125-pound Iron Body Bronze Mounted Gate Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke, bronze seat rings and taper wedge solid disc. Also available in All Iron.

Fig. 375 — 200-pound Bronze Gate Valve with screwed ends, inside screw rising stem, union bonnet and renewable, wear-resisting "Powellium" nickel bronze disc.

The Wm. Powell Co., Cincinnati 22, Ohio

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

POWELL VALVES

Keeps **BLACK LIQUOR** Moving Freely

with LESS WEAR

MORRIS SLURRY PUMP

It takes more than a clear-liquid, centrifugal pump to stand up under the grinding action of abrasive mixtures . . . or to handle adequately thick, caustic, corrosive liquors. For these reasons alone, the handling of liquors is often a problem—unless you use the Morris Centrifugal Slurry Pump.

WHY PAPER MILLS USE

MORRIS

BLACK LIQUOR PUMPS

These pumps are hydraulically and mechanically designed for the *express purpose* of handling liquids containing solids.

The wearing parts are more than twice as thick as in conventional clear-liquid pumps.

The use of corrosion and abrasion resisting alloys is not merely an expedient to lengthen the life of an otherwise unsuitable design . . . but a true means of augmenting the life period of an inherently long-enduring unit.

Morris Slurry Pumps keep black liquor moving freely—because Morris Engineers have been meeting various material handling requirements for 82 years. Consult with them on your pumping problems. This service is free and without obligation to you.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Branch Offices in Principal Cities

MORRIS CENTRIFUGAL PUMPS

UPA-CIO To Meet in Policy Convention

CLEVELAND — The first policy convention of the United Paperworkers of America—CIO, to convene in Cleveland, on Monday, February 17, will report a membership growth of better than 150 percent in the three years since President Philip Murray chartered the organization. The original 78 locals that formed the Paper Workers Organizing Committee on January 1, 1944, have grown to 147; the membership has increased some 150 percent; 200 contracts are in force.

Among those expected to address the three-day convention at the Hotel Hollenden, Cleveland, are James B. Carey, National CIO Secretary-Treasurer; David J. McDonald, secretary-treasurer of the United Steel Workers; R. J. Thomas, vice-president of the United Autoworkers; George Baldanzi, vice-president of the Textile Workers of America; and Kermit Eby, National CIO director of research and education.

Combined Locks Force Elects Its Unions

COMBINED LOCKS, Wis.—Two independent unions were selected January 23 by employes of the Combined Locks Paper Company to be their collective bargaining agents, in an election conducted by the National Labor Relations Board Milwaukee office. Office and clerical workers will be represented by the Combined Locks Paper Company Office Employes' Independent union and the foremen selected the Foremen's union of the Combined Locks Paper Company, also independent.

Thilco Foremen Adopt New Meeting Schedule

KAUKAUNA—The Thilco Foremen's Club has adopted a new meeting time schedule, which went into effect Monday, February 3. The business meeting is held from 4:30 to 5:15 in the afternoon, followed by an intermission of 15 minutes. Dinner is served from 5:30 to 6:15, and the program concluding the meeting is from 6:15 to 7:30. The program on February 3 included a short movie, shown at the business meeting, covering the subject of veteran rehabilitation, and a talk after the dinner by Kenneth Wells, Chicago Regional manager of the National Association of Foremen.

Badger Foremen to Dine

NEENAH, Wis.—The Badger-Globe Foremen's Club is planning a dinner meeting February 10. The program will include talks by C. W. Nelson and J. T. Whelan of the staff engineering department.

A Fine Thing FOR THE MOLE

Uncontrolled penetration is excellent, from the standpoint of a mole—but with gloss ink printing in box making, the printer will appreciate your paperboard being sized with KELGIN.

KELGIN, the modern algin surface sizing agent, controls the penetration of printing ink oils and waxes. It insures full ink brilliance. It provides a faultless printing surface, of uniform smoothness and density. It is ideal for water box application in the calender stacks. It does not cause foaming—picking—sticking to the rolls.

KELGIN, a product of nature, is rigidly processed to produce consistently uniform results. Free of impurities, it will meet your most exacting formula requirements. You'll find it both easy to use and economical in use!

KELCO COMPANY

20 N. Wacker Drive, CHICAGO-6 | 31 Nassau Street, NEW YORK-5 | 530 W. Sixth Street, LOS ANGELES-14

Cable Address: KELCOALGIN—New York

IMPORTS

NEW YORK IMPORTS

WEEK ENDING FEBRUARY 8, 1947

SUMMARY

Newsprint	1944 rolls
Wall Paper	21 bls., 7 cs.
Tracing Cloth	102 cs.
Filter Paper	24 cs.
Drawing Paper	8 cs.
Letter Paper & Envelopes	4 cs.
Miscellaneous Paper	1 cs.

NEWSPRINT

Montmorency Paper Co., Inc., Rockliffe Park, St. Johns, 1944 rolls.

WALLPAPER

W. H. S. Lloyd & Co., Port Fairy, London, 6 cs., 21 bls.

R. F. Downing & Co., Pioneer Wave, Havre, 1 cs.

TRACING CLOTH

E. Dietzgen & Co., Inishowen Head, Liverpool, 20 cs. (bleached cotton).

Keuffel & Esser Co., Inishowen Head, Liverpool, 21 cs. (bleached cotton).

American Express Co., American Forwarder, Liverpool, 18 cs. (cotton).

Keuffel & Esser Co., George E. Merrick, Liverpool, 43 cs. (bleached cotton).

FILTER PAPER

H. Reeve Angel & Co., Inc., Queen Elizabeth, Southampton, 24 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., Queen Elizabeth, Southampton, 8 cs.

LETTER PAPER & ENVELOPES

Stevens Nelson Paper Corp., Drotningholm, Gothenburg, 4 cs.

MISCELLANEOUS PAPER

International Forwarding Co., Pioneer Wave, Havre, 1 cs.

RAGS, BAGGINGS, ETC.

Tradesmans National Bank Trust Co., Port Fairy, London, 148 bls. rags.

A. W. Fenton Co., Excelsior, Genoa, 152 bls. dark cottons.

Continental Bank Trust Co., Albion Victory, Leghorn, 94 bls. rags.

Continental Bank Trust Co., Albion Victory, Genoa, 259 bls. hemp waste.

American Cotton Products Co., Rio Branco, Pernambuco, 105 bls. cotton waste.

Castle & Overton, Inc., American Clipper, Liverpool, 110 bls. cotton rags.

(———), American Forwarder, Glasgow, 37 bls. brown linen threads.

Castle & Overton, Inc., American Forwarder, Glasgow, 64 bls. old hessian scrim.

J. T. Flannery, American Forwarder, Glasgow, 354 bls. old webbing.

J. Eisenberg & Son, Inc., Coastal Delegate, Havana, 58 bls. old rags.

D. Bennedetto, Inc., Coastal Delegate, Havana, 51 bls. rags.

Charles Silver, Coastal Delegate, Havana, 23 bls. rags.

Burnet Foreign Trading Corp., Coastal Delegate, Havana, 50 bls. cotton waste.

OLD ROPE

Castle & Overton, Inc., American Forwarder, Glasgow, 64 coils.

CASEIN

Casein Co. of America, Division of The Borden Co., Biddeford Victory, Buenos Aires, 4000 bags (ground lactic).

Colloids, Inc., Biddeford Victory, Buenos Aires, 1000 bags (ground).

Aralac, Inc., Biddeford Victory, Buenos Aires, 1500 bags (ground).

Champion Paper & Fibre Co., Biddeford Victory, Buenos Aires, 1000 bags (ground lactic).

Paul A. Dunkel, Biddeford Victory, Buenos Aires, 1000 bags.

Perkins Glue Co., Biddeford Victory, Buenos Aires, 625 bags (lactic).

American Cyanamid & Chemical Corp., Molda, Buenos Aires, 1000 bags (ground lactic), 110,230 lbs.

Tupman Thurlow Co., Inc., Molda, Buenos Aires, 700 bags (ground lactic), 77,161 lbs.

GLUESTOCK, ETC.

Karr Ellis Co., Inishowen Head, Liverpool, 370 bags dry hidecuttings.

E. Butterworth & Co., Inc., George E. Merrick, Liverpool, 193 bags dry hidecuttings.

Karr Ellis Co., George E. Merrick, Liverpool, 338 bags dry hidecuttings.

John Gorvers, Santa Clara, Barranquilla, 77 bdls. dry hidecuttings.

Darmstadt Scott & Courtney, American Clipper, Liverpool, 190 bags gluestock.

Darmstadt Scott & Courtney, Biddeford Victory, Buenos Aires, 200 bls. dry gluestock.

H. Remis, Cape Avinov, Barranquilla, 629 rolls dry gluestock.

John Gorvers, Cape Avinov, Barranquilla, 218 bls. dry gluestock.

John Gorvers, Coastal Delegate, Havana, 124 bls. dry gluestock.

BOSTON IMPORTS

WEEK ENDING FEBRUARY 8, 1947

Atlantic Gelatin Co., Molda, Buenos Aires, 101 bls. gluestock.

PHILADELPHIA IMPORTS

WEEK ENDING FEBRUARY 8, 1947

Castle & Overton, Inc., Excelsior, Genoa, 160 bls. dark cottons.

French Fourdrinier Maker Arrives in New York

NEW YORK—Andre Garteiser, managing director of the Rai Wire Works, Paris, arrived in New York on January 28 for a stay of one or two months in the United States, Cuba and Mexico. The Rai Works is the largest French manufacturer of specialty Fourdrinier wires, producing more than half of the paper machine wires used in France.

Before the war Rai supplied a considerable number of Fourdrinier wires to American paper mills, and Mr. Garteiser intends during this visit to see his old customers again as well as to study the latest methods of high-production paper making in the United States and Canada and to make contact with American and Canadian wire manufacturers to exchange information and experience.

Although one of the factories of the Rai Wire Works is situated in Normandy the plant escaped serious damage and is now operating to full capacity. During his stay in New York, Mr. Garteiser is making his headquarters with Bowmall & Company, Inc., 250 Park Avenue.

British Currency Paper Maker Visits Crane Company Mill

DALTON, Mass.—Mr. and Mrs. Winthrop M. Crane, Jr., have been entertaining as their guests, Viscount and Viscountess Portal of England. Viscount Portal heads the Portal Paper Company, which for more than two hundred years has made the paper on which the Bank of England notes are printed. Mr. Crane is with Crane & Company, Inc., makers of paper for United States currency.

The viscount and viscountess have left Dalton and returned to New York.

Hoffmaster Opens Plant To Produce Napkins

OSHKOSH, Wis. — B. T. Hoffmaster has just resigned from the Marathon Corporation to form a new company, the Hoffmaster Paper Company, Inc., at 43 High Street. This is a converting plant, manufacturing special printed napkins and facial tissue napkins for the restaurant trade. Other products will be added later. W. M. Walton, also previously with Marathon, is vice-president and plant manager.

Bradner-Smith Affiliate to Build

HARVARD, Ill.—Plans are going forward for building a new converting plant for the Lake-Side Central Company of Chicago, makers of envelopes and stationery products. It is reported that work will get under way early this Spring. A one-story building is to be constructed which, with equipment, will cost slightly less than $100,000. The Lake-Side Central company is an affiliate of Bradner Smith & Company, Chicago paper wholesalers. Harvard is about fifty miles northwest of Chicago.

★For improving established products...

★For developing new products...

★ American Anode latices and mixes have been widely used in many industries for years—for doll skins and duck decoys, catheters and camera bellows, meteorological balloons and Mickey Mouses, and thousands of other interesting and useful products. As coatings and impregnants for textiles and paper, these modern materials have opened an entirely new field of development.

But we believe the surface has barely been scratched in finding profitable applications for these materials.

That's why we have a large laboratory, equipped with the latest and most modern research and testing equipment, and *staffed with experienced people who know how to use it.*

That's why we offer a *complete* research, design, engineering, and production consultant service.

That's why we invite you to come to us with your problems, and take advantage of our years of experience in compounding, development, and manufacturing. The chances are good that we can help improve your present products—equally good that we can help with the development of completely new products made from American Anode latices and mixes.

Latices and compounded mixes of GEON, HYCAR, Saran, neoprene, crude rubber, and GR-S are available. For more information about these modern materials—and *methods of using them*—please write Dept. AD-1, American Anode, Inc., 60 Cherry St., Akron, O.

AMERICAN ANODE

INCORPORATED

NATURAL AND SYNTHETIC RUBBER LATICES, WATER CEMENTS AND SUSPENSIONS

TRENDS

Office of the PAPER TRADE JOURNAL,
Tuesday, February 11, 1947.

Production of paper, paperboard and pulp continues at high levels with consumer demand showing little sign of easing. However, reports indicate some consumers are already building up inventories, particularly high priced fine papers. Paradoxically consumers are reported extremely cautious about overstocking. Most consumers seem to expect a market break within three to four months with quality up and prices down. Manufacturers maintain quality may improve but prices will remain high due to increased costs. Consumers evidently are recalling prewar competition with its prevailing buyer's market. From here, the overall picture looks at least two years too early for talk about a buyer's market of any real strength.

The index of general business activity for the week ended February 1 declined to 147.6 from 148.5 in the previous week, compared with 113.4 for the corresponding week in 1946. The index of paperboard production rose to 176.7 from 176.1 in the previous week, compared with 148.4 for the corresponding week in 1946.

Paper production for the week ended February 1 was estimated at 104.0 percent, compared with 103.7 for the preceding week, with 101.5 for the corresponding week in 1946, with 88.1 for 1945, with 90.9 for 1944, and with 87.2 percent for the corresponding week in 1943.

Paperboard production for the week ended February 1 was 102.0 percent of capacity, compared with 101.0 percent for the preceding week, with 95.0 for the corresponding week in 1946, with 92.0 for 1945, with 97.0 for 1944, and with 89.0 percent for the corresponding week in 1943.

Fiber container production totaled $46,000,000 worth in 1946, a record peacetime output, and yet inquirers from more than 3,000 companies which requested application data from the National Fiber Can Tube Association indicate the saturation point in uses of fiber containers has not been reached. Some of the more important new uses and products include applications as containers for oils and viscous liquids, development of rapid opening, "string cans," spray guns for insecticide uses and more rigid and moisture resistant products. Radio and electrical manufacturers developed new demands for fiber parts, fiber milk bottles became widely accepted and cosmetic industry uses expanded. In addition, demand for fiber cans has increased from retail and wholesale dealers, indicating a future market among household users.

The more liberal dividend policy followed by directors of National Container Corporation in recent months appears well supported by the company's current trend in volume and earnings. The current 75 cents quarterly declaration places the common stock on a $3 annual basis. Sales in all of 1946 were in excess of $29 million, compared with $18,766,822 for 1945. As a result of important acquisitions and expansions in recent years, National Container now has five converting plants, as well as four pulp and paper mills. Current operations are reported at record levels.

Crown Zellerbach Corporation's plant at West Linn, Oregon, is due to start producing a white coated paper for *Time* and *Life* magazines about July 4. Machinery is being installed in the new plant division now, part of the company's $15 million expansion program. Under terms of a contract, the plant will produce 30,000 tons of paper annually for West Coast editions of *Time* and *Life* printed in Los Angeles. . . . Hinde & Dauch Paper Company plans a $400,000 expansion program for its Buffalo factory. The project will provide 162,000 square feet of manufacturing space to meet antici-

Improved Stanley "Ace" Strapping Tool With Automatic Seal Feed

With this light, easy-to-use improved Stanley "Ace" Strapping Tool!

Even beginners do a fast, expert job with the improved Stanley "Ace" Strapping Tool. Positive spring feed holds a 100-seal clip in magazine in any position. Strapping is tensioned, cut and sealed in only 5 seconds. The improved "Ace" is available in 3 sizes for ⅜", ½" and ⅝" strapping to handle 'most any job. Special accessories designed for special needs. Write for full details or demonstration of what the Stanley improved "Ace" Strapping Tool can do for you. The Stanley Works, Steel Strapping Division, 202 Lake St., New Britain, Conn.

STANLEY

STEEL STRAPPING AND CAR BANDING SYSTEMS

pated future demands for the company's products. Machinery for the new plant, which will include a package laboratory, will account for a considerable portion of the expansion cost. . . . Bowater-Lloyd (New Foundland) Ltd., operators of the paper mill at Cornerbrook on the West Coast, have tentative plans for trebling the current annual output of 275,000 tons of newsprint.

Wood Pulp

Finland, as the result of a $20,000,000 long-term loan, expects to increase its output of pulp, paper and lumber, the source of the country's principal exports. To date expansion of production of pulp and paper has been held back by the need of renovation, many plants having gone without replacements for six years, and by shortages of fuel and motive power. Finland is reported to have made a commitment to step up exports of pulp and paper to this country as these bottlenecks are alleviated.

Coal and petroleum, hydroelectric equipment to furnish electricity for the industry and spare parts for trucks as well as iron, steel and lead will be financed by the loan among various other items.

On the domestic front the Census Bureau reports industry consumption of wood pulp in the production of paper and paperboard reached an all-time high of 12,000,000 tons in 1946.

Rags

New domestic cotton cuttings show some signs of steadiness this week. White shirt cuttings are taken up at the $11.50 to $12 level, along with unbleached muslins at the same price. Old domestic white repacked cottons still maintain their $5 level and roofing rags from $2 to $2.50.

New foreign white cotton cuttings remain in short supply at the $15 level. Mixed cuttings are showing more action at the $6.50 level.

Old Rope and Bagging

Foreign Manila rope, so called, remains firm at the 6.00c to 7.00c level; with domestic steady at 5.75c. Jute strings are 4.50c to 5.00c; sisal 4.00c to 4.50c and mixed strings continue at 1.75c.

Domestic gunny is still reported at the $4.25 to $4.50 level. Light wool tares are strong at the $4.75 to $5 level. Bright bagging is fair at $4.25 to $4.50.

Waste Paper

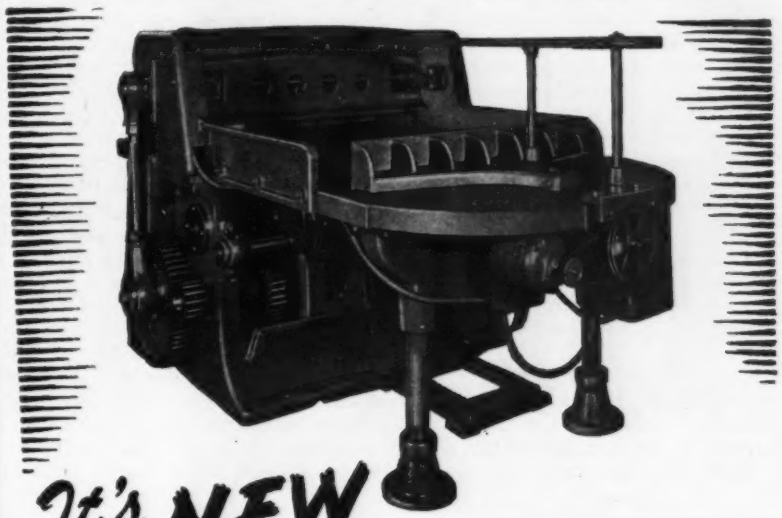
Market for waste paper remains fairly steady with mixed, folded news, overissue and old corrugated holding strong at prevailing levels. Export for overissue and old newspapers continues unabated. Some overissue for export has been reported as high as $45; domestic mills are currently paying slightly over the previous $35 level. No. 1 white ledger is strong at $70 to $80, with mixed colored ledger at $60 to $70.

Hall Speaks Before Lions

Edgar Hall, now in the paper business in Ohio, formerly associated with Pilcher-Hamilton Company in Chicago and at present president of the Paper and Twine Association, was the speaker at the January 23 meeting of the Downtown Club of the Lions, international service club, held at the Sherman Hotel in Chicago. The club is one of the largest in the Lions organization and it is reported that Mr. Hall again acquitted himself with real credit to the paper trade.

Baldwin Celebrates With Reception at Waldorf

NEW YORK—Officers and salesmen of the Baldwin Paper Company, Inc., have issued invitations for their 26th anniversary reception to be held in the Wedgewood Room, Waldorf-Astoria, from 11 a.m. to 4:30 p.m., on Monday, February 24. This day has been selected as one which will find most convention folks free to drop in the Wedgewood Room to spend a few minutes visiting with Baldwin executives and sales personnel.



It's NEW

SMITH & WINCHESTER
MODEL "E"
UNDERCUT TRIMMER

A NEWLY designed Undercut Trimmer retaining the outstanding features of the Smith & Winchester Standard Undercut with many new features, for fast, safe, accurate, more convenient operation. Features include: Heavy one-piece base frame; hinged front table to take away stock from cutter after cut; knife, to cut stock, raises from below the table; anti-friction bearings on drive shaft; disc type friction clutch; back gauge operated by variable speed, reversible motor for close setting; push button controls; illuminated index tape.

The Model "E" Undercut meets the needs of the modern finishing department for high production, accurate trimming and safe operation.

Investigate the new Model "E" for your peacetime needs. Bulletin giving full particulars mailed on request.

Makers of PAPER BAG and PAPER MILL MACHINERY

THE SMITH & WINCHESTER
Manufacturing Company
SO. WINDHAM, CONN.

Serving the Paper Industry Since 1828

MARKETS

BLANC FIXE—Raw materials shortage hinders active markets. Pulp is currently quoted at $55 per ton, in barrels, car lots, at works; the powder is currently quoted at $67.50 per ton car lots, f.o.b. works.

BLEACHING POWDER—Supplies adequate to meet current demands although there is some delay in current shipments. Quotations are unchanged. Prices on bleaching powder range from $2.65 to $3.35 per 100 pounds, in drums, car lots, at works.

CASEIN—Current prices on processed acid precipitated casein are reported around 46 to 52 cents per pound for both domestic and Argentine grades; f.o.b. shipping point, with quantity not specified at the present time. Supplies are expected to increase in the next few months.

CAUSTIC SODA—Demand very strong with supplies tightest ever. Shipments are behind schedule. Cutback production further reduces stocks. Solid caustic soda is reported at $2.50 per 100 pounds; flaked and ground offered at $2.90 to $3.00 per 100 pounds.

CHINA CLAY—Supply tight as demand continues heavy. Domestic filler clay is currently $8.50 to $9.00 per ton, car lots. Coating clay is $12 car lot and $16 less car lot. Imported clay is $20 to $22 per ton, car lot, export warehouse; and $45 less car lot for powdered clay.

CHLORINE—Market tight as demand continues to exceed output, stocks low. Lack of tank cars continues to hamper deliveries. Quotations unchanged. Chlorine is currently quoted at $2 to $2.25 per 100 pounds.

ROSIN—Gum rosin in drums, per 100 pounds net, in yard New York, car lots, B, D, $10.80; E, F, G, H, I, K, M, $11.80; WG, $12.05; WW, $12.05; Wood Rosin, per 100 pounds l.c.l., f.o.b. N. Y., B, $4.65; FF, $7.95; G, H, I, $8.75; WW, $8.95.

SALT CAKE—Demand continues to increase with supplies showing little improvement. Prices remain unchanged. Domestic salt cake is quoted at $22 to $24 per ton in bulk. Chrome salt cake is quoted at $16 per ton.

SODA ASH—Demand active as supplies continue short, previous orders filled. Contract orders prevail at the same high levels. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.05; in paper bags, $1.20; and in barrels, $1.60.

STARCH—Supplies are showing steady improvement. Previous orders filled. Starch prices remain unchanged. The pearl grade is quoted at $3.62 per 100 pounds; powdered starch at $3.73 per 100 pounds.

SULPHATE OF ALUMINA—Demand active, supply fair. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.20 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is quoted at $1.75 to $2 per 100 pounds, in bags, at works.

SULPHUR—Strong seasonal demand is reported with stocks plentiful to meet all requirements. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price f.o.b. at Gulf Ports is $20 per long ton.

TALC—Domestic and French grades are moving in fair volume with prices steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $35 to $45 per ton. All prices in car lots.

Size 16 grapple illustrated is capable of unloading an entire car of 18 ft. logs in about five minutes.
Lift the One You Need
Right Out of
Bulletin #2043
BLAW-KNOX
Pulpwood
GRAPPLES
Wherever pulp wood is handled you'll find Blaw-Knox grapples doing a fast, economical job — loading, unloading and stacking . . . From the photos, drawings and specifications contained in Bulletin No. 2043 you can select the one best suited to your needs. Write for it today.
Send for your copy of Bulletin No. 2043.
BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
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PENN SALT

Liquid Chlorine

BECAUSE liquid chlorine is such an important agent in paper production, many leading paper manufacturers all over the country look to Pennsalt as their source of this vital bleaching chemical.

Pennsalt was a pioneer in liquid chlorine production in this country, and for nearly half a century has supplied a high quality chlorine to Industry.

PENNSALT PRODUCTS for the Pulp and Paper Industry: Liquid Chlorine • Bleaching Powder • Corrosion-Proof Cements • Anhydrous Ammonia • Acids • Perchloron* • Sodium Chlorate • Potassium Chlorate • Sodium Arsenite • Sodium Hypochlorite • Hydrogen.

*Reg. U. S. Pat. Off.

PENNSYLVANIA SALT MANUFACTURING COMPANY

1000 Widener Building, Philadelphia 7, Pa.

NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • CINCINNATI • WYANDOTTE • TACOMA • PORTLAND, ORE.

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume of business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	$84.00	@	—
Sheets	103.00	"	—

Kraft—per cwt.—Carload Quantities Zone A, Delivered

Superstandard Wrapping	*$5.75	@	$6.00
No. 1 Wrapping	*5.50	"	5.75
Standard Wrapping	*5.25	"	5.50
Standard bag	*5.25	"	5.50

* Prices for Standard Wrapping are for 40 lb. base weight; for Standard Bag for 30 lb. base weight.

Tissues—Per Ream 24x36 (480) 10 lb. Zone 1.

Wh. No. 1 Frd.	1.10	@	1.20
Wh. No. 1 M. G.	1.10	@	1.20
Wh. No. 1½	.95	@	1.10
Wh. No. 2	1.00	@	1.10
Wh. Anti-Tar.	2.25	@	3.50
Kraft Unbl.	1.15	@	1.25
Manila No. 2	.90	@	1.05

Toilet—Per Case of 100 rolls 1 M Sheets.

Unbleached	4.47	@	5.50
Bleached	6.50	"	—

Paper Towels — Per Case of 3750 Zone 1.

Wh. C. fold 11x13¼	4.09	@	—
Br. Sgl. fold 10 in.	2.37	@	2.48
Br. M'tif'd 9½x14¾	3.48	"	—
Br. M'tif'd 9½x9¾	2.37	"	2.48

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	@	—
No. 1 Manila 35 lb.	6.00	"	7.00

Boards, per ton—

News	*70.00	@	75.00
Chip	*67.50	"	73.00
Sgl. Mla. Lt. Chip	*80.00	"	89.00
White Pat. Coated	*86.00	"	101.50
Kraft Liners 42 lb.	*84.00	"	100.00
Binders Boards	94.00	"	126.00

Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content	Bonds	Ledgers
	White, Assorted Items	
100% Rag Ext. No. 1	$39.75 @ $46.75	$40.90 @ $48.00
100% Rag	32.85 " 38.50	34.00 " 40.00
85% Rag	.... "	30.55 " 38.75
75% Rag	24.30 " 28.50	24.45 " 30.00
65% Rag	.... "	.... " ....
50% Rag	20.05 " 24.50	21.25 " 25.75
25% Rag	17.85 " 21.75	19.00 " 23.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers.. White, Assorted Items

	Bonds	Ledgers
No. 1	$12.00 @ $14.50	$13.15 @ $16.00
No. 2	11.25 " 13.75	12.25 " 15.00
No. 3	.... "	.... " ....
No. 4	10.60 " 13.00	11.75 " 14.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers— White, Cased Paper

No. 1 Glossy Coated	$14.70	@ $16.75
No. 2 Glossy Coated	13.75	" 15.5[illegible]
No. 3 Glossy Coated	13.20	" 16.0[illegible]
No. 4 Glossy Coated	12.80	" 14.9[illegible]
No. 1 Antique (Watermarked)	11.35	" 12.7[illegible]
No. 2 Offset	10.65	" 12.2[illegible]
A Grade E. F.	10.60	" 12.0[illegible]
A Grade S. & S. C.	11.00	" 12.5[illegible]
B Grade E. F.	10.30	" 11.7[illegible]
B Grade S. C.	10.70	" 12.2[illegible]
C Grade E. F.	10.60	" 11.5[illegible]
C Grade S. C.	10.40	" 12.0[illegible]
D Grade E. F.	9.70	" 11.0[illegible]
D Grade S. & S. C.	10.10	" 11.5[illegible]

Ivory & India at $.50 cwt. extra.

Wood Pulp

Domestic mill prices delivered with former OPA freight allowances.

	Per Short ADT
Groundwood	$75.00 to —
Unbleached Sulphite	105.00 " —
Bleached Sulphite	115.00 " 122.50
Bleached Soda	105.00 " 115.00
Unbleached Kraft	102.50 " —
Southern Kraft	90.00 " —

Canadian mill prices delivered with freight allowances of $7.50 per ADT; unless otherwise specified:

	Per Short ADT
Regular Kraft	$102.50 to —
Select Unbleached Kraft (no freight allowance)	105.00 " —
Unbleached Sulphite	105.00 " —
Glassine Unbleached Sulphate (no freight allowance)	102.50 " —
Bleached Soda	105.00 " 115.00
Groundwood	75.00 " 80.00
Sideruns Pulping News	75.00 " —
Hardwood and Specialty Grades	Nominal

Swedish wood pulp prices, per ton of 2,000 lbs. air dry weight on dock usual Atlantic and Gulf ports with an average freight cost of about $9.00 per short ton included. Subject to change as it is said these prices are not satisfactory to Swedish producers:

	Per Short ADT
Bleached Sulphite	$120.00
Bleached Kraft	126.00
Unbleached Sulphite	95.00
Unbleached Kraft	89.00

Finnish quotations f.o.b. shipping point

	Per Short ADT
Bleached Sulphite	$165.00
Unbleached Sulphite	132.50
Unbleached Sulphite (special grade)	137.50
Unbleached Sulphate	132.50
Unbleached Sulphate (special grade)	159.00

Other European countries, at the present time, are not quoting on prompt and forward deliveries of wood pulp, because they have no tonnage available for export.

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

White Shirt	$11.50	to	$12.00
Light Silesias	7.50		
Unbleached Muslin	11.50	"	12.00
White Back Blue Overalls	8.25		
Blue Overalls	7.75		
Unbl. Fancy Shirt	4.50	"	5.00
Light Percales	5.50	"	6.00
Light Prints	5.25	"	5.95
Washables	4.00		
Bleachable Khaki	5.50	"	6.00
Unbleachable Khaki	5.00	"	5.50
Cottonades	4.50	"	5.00

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.00
No. 1 Whites Miscellaneous	4.25
No. 2 Whites Repacked	4.00
No. 2 Whites Miscellaneous	3.50
Blue Overalls	3.75
Thirds and Blues Repacked	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags	2.20
No. 2 Roofing Rags	2.10
No. 3 Jute Bagging	2.00
No. 4 Brussels and hard back carpets	2.00
No. 5A Roofing Rags	2.00

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.
New Dark Cuttings	$6.00 to ....
New Mixed Cuttings	6.50 " ....
Light Silesias	9.00 " 10.00
Light Flannelettes	8.00 " 9.00
New White Cuttings	13.00 " 15.00
Fancy Shirt Cuttings	9.00 " 10.00
Light Prints	8.00 " 10.00
Bleachable Khaki, No. 1	7.00 " 7.50
Unbl. Khaki, No. 1	6.25 " 6.75

Old Foreign Rags

(F.O.B. New York)

	Per 100 lbs.
No. 1 White Linens	$14.00 to 16.00
No. 2 White Linens	12.00 " 13.00
No. 3 White Linens	8.00 " 9.00
No. 4 White Linens	8.00 " 9.00
No. 1 White Cottons	10.00 " 12.00
No. 2 White Cottons	8.00 " 9.00
No. 3 White Cottons	6.50 " 7.00
No. 4 White Cottons	5.00 " 5.50
Extra Light Prints	7.50 " 8.00
No. 1 New Light Prints	6.25 " 6.75
Med. Light Prints	5.25 " 5.75
Dutch Blue Cottons	5.25 " 5.50
Checks and Blues	4.00 " 4.25
Linsey Garments	4.50 " 5.00
Dark Cottons	3.75 " 4.00
Old Shopperies	3.25 " 3.50
New Shopperies	3.25 " 3.50

BAGGING

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$4.75 to 5.00
Domestic Gunny, No. 1	4.25 " 4.50
Light Wool Tares	4.50 " 4.75
Heavy Wool Tares	4.75 " 5.00
Bright Bagging	4.25 " 4.50
Foreign Manila Rope	6.00 " 7.00
Domestic Manila Rope	5.75 " ...
Jute Strings	4.50 " 5.00
No. 1 Sisal Strings	4.00 " 4.50
Mixed Strings	1.75 " ...

Waste Paper

Prices to Mills
(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$120.00
No. 1 Hard White Envelope Cuts	90.00	"	100.00
No. 1 Hard White Shavings, unruled	100.00	"	110.00
No. 1 Hard White Shavings, ruled	80.00	"	90.00
Soft White Shavings, one cut	95.00	"	105.00
No. 1 Soft White Shavings	85.00	"	95.00
Soft White Shavings, Misc.	65.00	"	75.00
No. 1 Fly Leaf Shavings	55.00	"	60.00
No. 2 Fly Leaf Shavings	50.00	"	55.00
No. 1 Groundwood Fly Leaf Shavings	30.00	"	33.00
No. 2 Mixed Groundwood Fly Leaf Shavings	(nominal)		
Mixed Colored Shavings	(nominal)		
Mixed Groundwood Colored Shavings	(nominal)		
Overissue Magazines	(nominal)		
No. 1 Heavy Books & Magazines	40.00	"	45.00
Mixed Books	22.00	"	25.00
No. 1 White Ledger	70.00	"	80.00
No. 2 Mixed Ledger, colored	60.00	"	70.00

MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette	Wax	Photographic	Jet Propulsion
Condenser	Grease Proof	Snap-out Forms	Aero-engine Parts

MEISEL PRESS MFG. CO. 950 Dorchester Ave., Boston

New Manila Envelope Cuttings, one cut.	100.00	"	110.00
New Manila Envelope Cuttings	65.00	"	75.00
Extra Manilas	40.00	"	45.00
Mixed Kraft, Env. & Bag Cuttings	75.00	"	85.00
Kraft Envelope Cuttings	100.00	"	105.00
Triple Sorted, No. 1 Brown Soft Kraft	70.00	"	75.00
New 100% Kraft Corrugated Cuttings	70.00	"	75.00
No. 1 Assorted Old Kraft	40.00	"	50.00
New Jute Corrugated Cuttings	27.00	"	—
Old 100% Kraft Corrugated Containers	(nominal)		
Box Board Cuttings	23.00	"	—
White Blank News	75.00	"	80.00
Overissue News	(nominal)		
No. 1 News	26.00	"	27.00
No. 1 Mixed Paper	19.00	"	21.00

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—			
New White No. 1	.07¼		
New White No. 2	.05¼		
Light Silesias	.05¼		
Black Silesias, soft	.03¼		
New Unbleached	.07½		
Washable Prints	.04¼		
Washable No. 1	.03		
Blue Overall	.05½		
Cottons—Acording to grades—			
Washable Shredding	.01¾		
Fancy Percales	.04¾		
New Black Soft	.03¼		
Khaki Cuttings—			
Unbleachable Cotton Cuttings	.03½		
Bleachable Cotton Cuttings	.04¼		
Men's Corduroy	.03½		
Ladies' Corduroy	.03		
Cottonades	.03¼		

Domestic Rags (Old)

White No. 1—Repacked	3.80	to	4.00
Mixed White	3.50	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	2.50
Repacked	2.20	"	—
Roofing Stock—			
Foreign No. 1	1.85	"	—
Domestic No. 1	1.75	"	—
Domestic No. 2	1.65	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	to	3.50
Old Corrugated	28.00	"	30.00
Mill Wrappers	22.00	"	25.00

Twines

All Prices Nominal
(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—			
India	.26	@	.29
Fine Polished—			
Fine India	.31	"	.35
Unpolished—			
Paper Makers	.20	"	.26
Tube Rope	.22	"	.27½
Wrapping	.26	"	.33½
Cotton	.70	"	—
(Hard Fiber)			
Mex. Sisal	.21	"	.24
Manila	.33	"	—
(Hemp)			
Polished Hemp	.63	"	—

No. 1 Clean Bright—Sisal Strings	.04	"	—
No. 2 Clean Bright—Sisal Strings	.03	"	—
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.85
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.80	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b Phila.)

Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	45.00	"	50.00
Soft White Shavings, Misc.	65.00	"	70.00
No. 1 White Ledger	52.00	"	55.00
No. 2 Ledger, colored	42.00	"	45.00
No. 1 Heavy Books & Magazines	38.50	"	40.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	65.00	"	75.00
No. 1 Assorted Old Kraft	40.00	"	—
No. 1 Mixed Paper	19.00	"	21.00
Box Board Cuttings	23.00	"	25.00
Kraft Corrugated Cuttings	nominal		
Old Corrugated	28.00	"	30.00
Overissue News	35.00	"	—
No. 1 News	26.00	"	30.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	7.00	@	8.00
No. 1 Hard White Shavings, ruled	7.00	"	8.00
Soft White Shavings, Mis.	6.25	"	6.50
No. 1 Fly Leaf Shavings	1.65	"	1.80
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.75	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	4.25	"	4.50
Groundwood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	—	"	.95
Overissue News	1.25	"	1.35
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	—	"	1.40
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.25	"	2.50

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	5.00	@	—
Domestic	5.00	"	5.12½
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.00	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	5.00	"	5.25
South America	—	"	3.25
Wool Tares—			
Foreign	4.50	"	—
Domestic	4.50	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	5.50	"	6.00
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.06	@	.06½
Fancy Percales	.04¼	"	.05
New White No. 1	.06¼	"	.07
New Light Flannelettes	.09½	"	.10
Canton Flannels, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06¼
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03	"	.03¼
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.11½	"	.12
Blue Cheviots	.05½	"	.04
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.06	"	.06¼
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06½
B. V. D. Cuttings	.11½	"	.12

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.90	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A.	1.35	"	—
Quality B.	1.20	"	—
Quality C.	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	@	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	43.00	"	49.00
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	38.00	"	42.00
No. 1 News	30.00	"	—
No. 1 Mixed Paper	19.00	"	20.00
Old Corrugated	33.00	"	—
Mill Wrappers	25.00	"	29.00

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IN PART

The outlook for industrial equipment and supplies is considered generally favorable. Full production of electrical machinery throughout the year is anticipated. Demand for farm machinery and equipment is expected to remain strong, but it is believed that shortages may ease in the autumn. The position of manufacturers of industrial machinery is considered good. Capacity production is anticipated in such fields as cement mills, pulp and paper mills and wood-working plants. Sales competition among manufacturers of office machinery is believed likely to appear before the end of the year.—*Guaranty Trust Company of New York.*

The most important benefit to be derived from the development and maintenance of an American paper export trade must eventually pay off. A steady demand in the export market for your brands or grades of paper adds another string to your bow. If some of our outstanding paper manufacturers have, as a matter of deliberate policy, continued to export through depression as well as boom years with a marked degree of success, why then should it not prove equally beneficial to the paper industry as a whole to set aside some part of their production for export?

It is most important to bear in mind that a steady flow of exports must be maintained. As is true in your domestic business, it is no more possible in the export field to turn this on and off as with a faucet. This is a fallacy that is, unfortunately, all too prevalent in the minds of paper manufacturers. Many consider that export is a stream into which production can be piped when demand in this country trickles off, and that as soon as a steady domestic demand is again resumed, it can be cut off without further consideration. Such a policy is disastrous.—*U. S. Paper Exporters Council*

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1946		Corresponding Weeks—1945	
December 28	71.8	December 29	60.8
January 4, '47	96.3	January 5, '46	89.1
January 11	102.6	January 12	95.3
January 18	103.8	January 19	94.4
January 25	103.7	January 26	94.5
February 1	*104.0*	February 2	101.5

COMPARATIVE MONTHLY SUMMARIES

1946		April	102.7	Aug.	104.7	Dec.	97.0
Jan.	94.7	May	100.7	Sept.	101.3	Year Avg.	101.1
Feb.	98.4	June	104.6	Oct.	106.4	1947	
March	104.4	July	94.0	Nov.	105.5	Jan.	*102.1*

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	89.1	86.1	104.3	87.2	88.6	86.7	94.7	*103.1*
Year Average	85.6	97.4	90.4	87.8	88.1	89.7	101.1	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1946		Corresponding Weeks—1945	
December 28	66	December 29	52
January 4, '47	85	January 5, '46	75
January 11	102	January 12	94
January 18	103	January 19	93
January 25	101	January 26	94
February 1	*102*	February 2	95

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1946	90	97	100	99	94	97	89	99	96	100	99	92	96
1947	*99*												

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

EDITORIAL

Perspective

Something of a distinct public service was offered in a paragraph of its January Monthly letter by the Royal Bank of Canada. In a bulletin that was devoted heavily to a summary of the importance and the value of its forest crop to the Dominion and its citizens, with special emphasis on over-all figures, the Bank sweeps aside any assumption that the pulp and paper industry is a continually "ravenous consumer of the forests" and suggests that its readers "will be surprised to learn that it takes only 16.7 per cent of the annual forest consumption. Fluewood uses 22.6 per cent, timber, pulpwood for export, and miscellaneous products 34.1 per cent, and fire, insects and disease take 26.6 per cent. Yet so vital is the continued supply of its raw material that the pulp and paper industry has done more on its own in the way of forest management and more in the way of developing the forest for use in perpetuity than all the other users combined.

"A log is about three times as valuable to the economy of the country if it is used by a pulp mill than if it is merely sawn. If the log is exported, according to the brief prepared for the Ontario Royal Commission, its value is only one-fifth or one-sixth as great as if converted into paper. In the last year for which figures are available, we exported 1,672,000 cords of wood. Since a cord of wood about equals a ton of newsprint paper, and the biggest individual newsprint mill produces 900 tons of paper a day, it may be seen that the wood now exported would keep six mills running all year."

After dealing with production of pulp, paper and other products, the Monthly Letter suggests the opportunity that is open to operators of small wood lots. "When running at capacity, the pulp and paper industry uses some eight million cords of pulpwood annually, of which about 6 million cords are cut from limits leased or owned by the industry, while the remainder is purchased from private forest owners, the majority of whom are farmers. More could be made of the private business of raising pulpwood for sale if private woodlots were operated under any kind of long-term forestry plan, assuring continuity and certainty of supply. In 1945 the industry paid $19 million for pulpwood it bought from private vendors."

In conclusion, the article remarks: "And, finally, there is imperative need for world law and order. World trade is vital to this Canadian industry. Agriculture can vary its crops from year to year according to surplus or dearth, but in growing perennials such as trees there must be a long-time assurance of peaceful commerce. There will be no advantage in the most perfect system of forest management if the forest industries are unable to sell their products."

Summer Atmosphere

As sensible a statement as has come lately to attention is that which was made this week in its monthly review by the National Association of Credit Men. In a study devoted mainly to tax problems, to the general high cost factors that now weigh heavily on industry, the credit men hold out stern notes of caution and reasoned appraisals of demand. On the warning side:

"The customer is becoming more discriminate in his buying; he is weighing values more carefully. Wage costs that are unreasonable or pricing policies that are unrealistic soon will be discontinued in the market."

But, the bulletin concludes: "The competition ahead in business, and the readjustments that must be made, indicate some reduction in the high-rate of business activity. During 1947, it is not likely that this will be for a prolonged period of time; the demand for goods is too extensive and world-wide in character. Customers will check their buying when the quality, style or price of the articles they need is, in their opinion, unattractive. Such sporadic buying will not, however, satisfy their continuing needs. Until these needs are supplied, the business atmosphere should remain healthy."

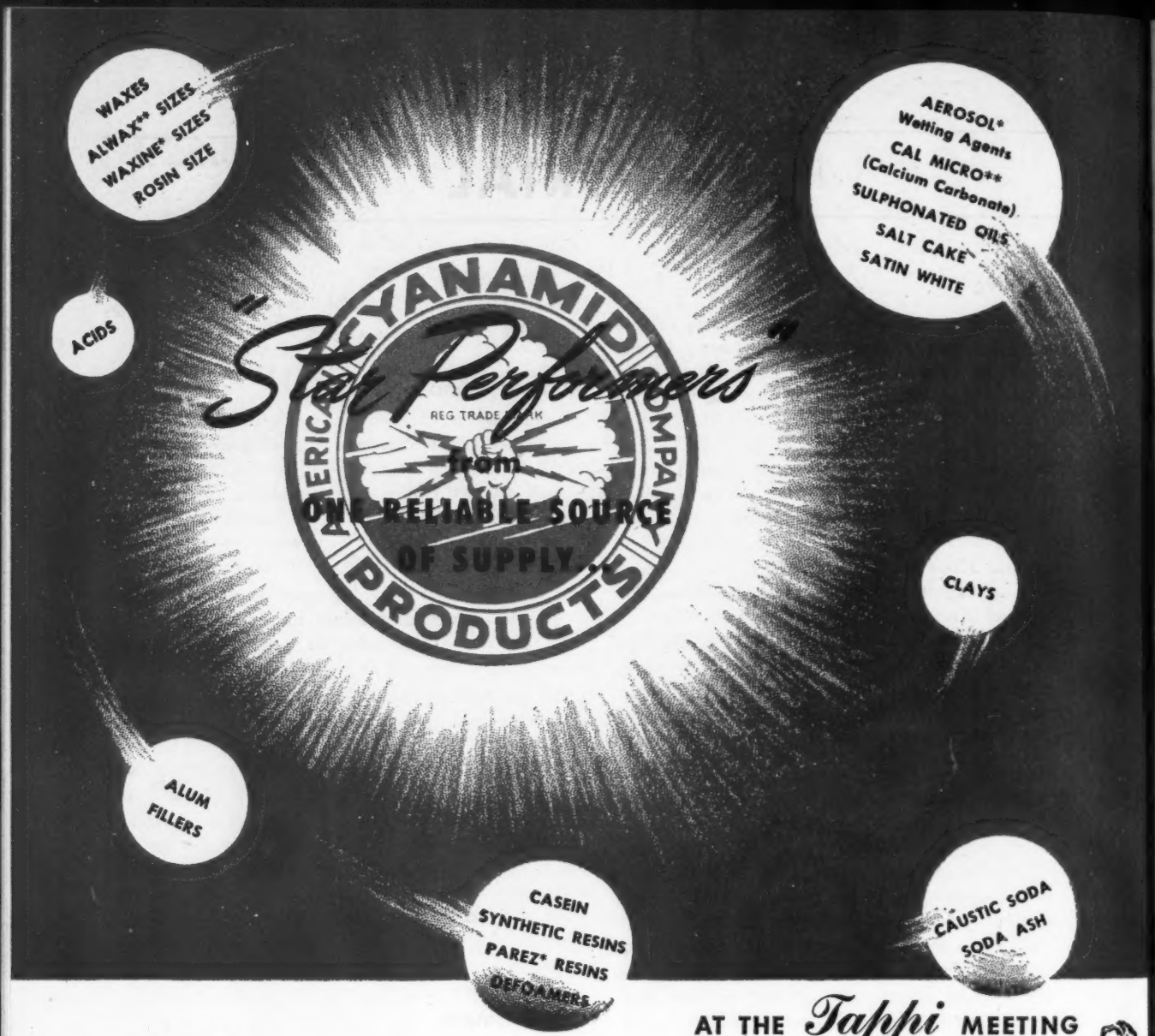
Small Business

It may have come as something of a shock for the small town weekly publisher to hear himself accused; as a member of that industrial group generally known as small businesses he is more often accustomed to join in the clamor when a company whose chief offense is bigness is hailed before the bar of public opinion as an offender. But there it is, in black and white in the document devoted to "Survival of a Free Competitive Press" as laid before the Senate Committee on Small Businesses by its retiring chairman, Senator Murray.

"Do you realize" asked the New England advertising agency executive of the New Hampshire Weekly Publishers Association, " do you realize that the greatest problem so many of you have is that you are monopolies? You are so often a monopoly in your own community. You have no competition. As to national advertising, you say, "if it's coming to my town I'll get it."

W. L. Cook

EDITOR



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Edited by R. G. Macdonald, Secretary

Power Distribution Systems for Paper Mills*

By W. C. Bloomquist[1]

Abstract

This paper describes the important factors to consider in expanding and modernizing the power-distribution systems of paper mills. The key-note throughout is sound engineering principles combined with the proper consideration of the over-all system economics.

Emphasis has been given to the selection of the proper generation, distribution, and utilization voltage levels, with data for economic comparisons. Included is a chart which is useful in selecting the proper generation voltage for new mills as a function of the mill electrical capacity and which is also useful in determining the extent to which existing mills can expand their power facilities.

The load-center system of power distribution—its principles, economic advantages, and use in paper mills—is fully covered.

Attention has been given to methods of distributing power to loads requiring a high degree of power-service reliability. The merits, limitations, and relative costs for several basic arrangements are discussed.

The trend in system operation is towards a grounded system and since this practice is relatively new in paper mills, the subject is discussed in detail. The operating advantages with a grounded system are well covered. Several methods of establishing a grounding source are shown by simple diagrams.

Special attention is given to the economic advantages of capacitors for small sized mills. Data are included showing the system capacity released by power-factor improvement and the economic limits of capacitors for obtaining additional system capacity.

Several case histories are included showing how certain mills have handled their expansion and modernization programs.

Power requirements in paper mills have increased considerably since the days when 575-volt or even 2400-volt systems were adequate; yet there are many plants where the power generation, distribution, and utilization systems have not kept pace with the mill load expansions. The purpose of this paper is to discuss modern power-distribution systems for new mills and modernization of existing mills, including: (1) selection of voltages for generation, distribution, and utilization; (2) comparison of 4160- and 2400-volt systems for generation and utilization; (3) load-center system of power distribution; (4) system arrangements for various degrees of service reliability; (5) system grounding practices; (6) economic advantages of capacitors for small mills; and (7) types of equipment to use.

Paper mills will be classified as follows with respect to power requirements:

1. Small mills—up to 2000-kva load (See Fig. 1).

Typical of this class are small boxboard and paper mills using waste paper and some new pulp. Occasionally locally generated power is used, but more commonly all or the major part of the power is purchased. Mechanical-drive turbines may be used for heat balance.

2. Medium-sized mills—up to 10,000-kva load (See Fig. 2).

Typical of this class are the large boxboard and paper mills in the North. These plants usually generate part of their electric power from process steam, and the older mills may also have hydro generation. It is customary to have a tie to the utility system.

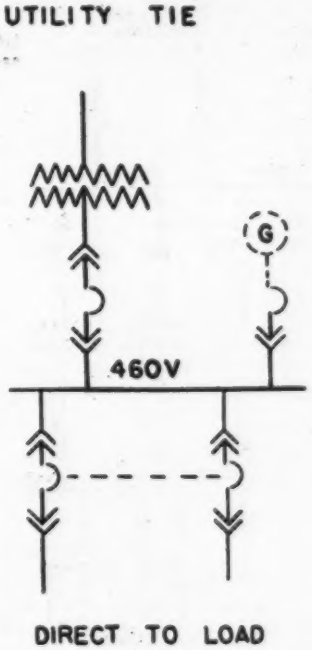


FIG. 1
Modern power-distribution system for typical small paper mill

* Presented at the meeting of the Technical Association of the Pulp and Paper Industry held at the Pfister Hotel, Milwaukee, Wis., Oct. 2-4, 1946.

[1] Application Engr., Industrial Engineering Divisions, General Electric Co., Schenectady 5, N. Y.

3. Large mills—10,000- to 30,000-kva load. (See Figs. 3 and 4).

The Southern kraft mills and some of the Northern book mills are typical of this class. These plants chip and cook all their pulp and usually generate all their electric power.

Selection of System Voltage Levels

In discussing the selection of system voltage, it will be well to first differentiate between utilization-equipment voltage rating, generator and step-down-transformer voltage rating, and the corresponding nominal system voltage. These are given in the following table and whenever the *system* voltage level is referred to, it is the nominal system voltage as given in column 3 that is implied.

Utilization Equipment Voltage Rating	Generator or Transformer No-load Voltage Rating	Nominal System Voltage Class
220 or 230	240	230
440 or 460	480	460
550	600	575
2300	2400	2400
4000	4160	4160
6600	6900	6900
13,200	13,200 to 14,400	13,800

The selection of the proper system voltages for both present installations and future expansion should be strictly on the basis of over-all economic. This will be influenced by the system capacity, cost of component parts of the power system, including switching equipment, distribution channels, transformers, etc., and the rating of motors. At first thought it may seem odd that the subject of motors should be included as an important contributing factor in the selection of the proper system voltage level, but it is and a very important consideration too.

The chart of Fig. 5 is a guide for the selection of the main generation and distribution voltage level for new plants and also shows the extent to which existing plants can be reasonably expanded. This chart is based on good engineering practice with consideration to over-all economics.

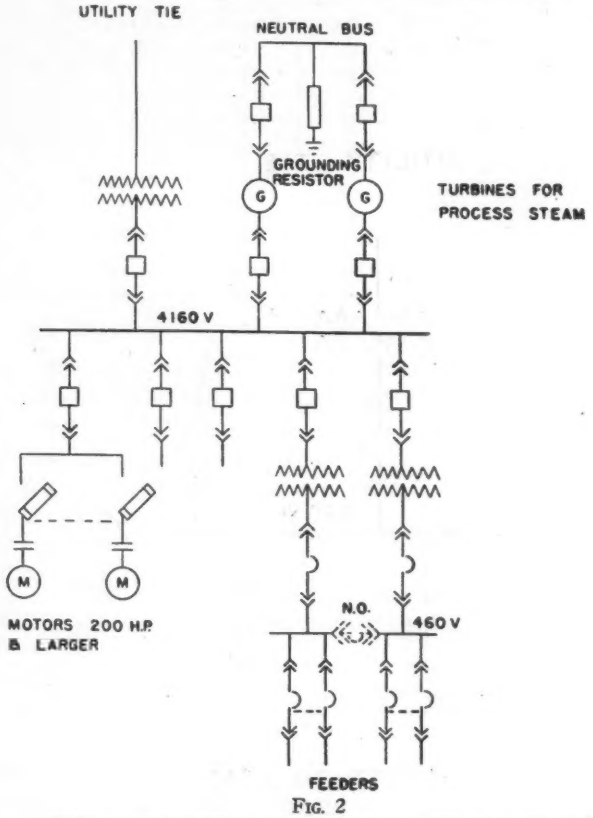


FIG. 2

Modern power-distribution system for typical medium-sized paper mill

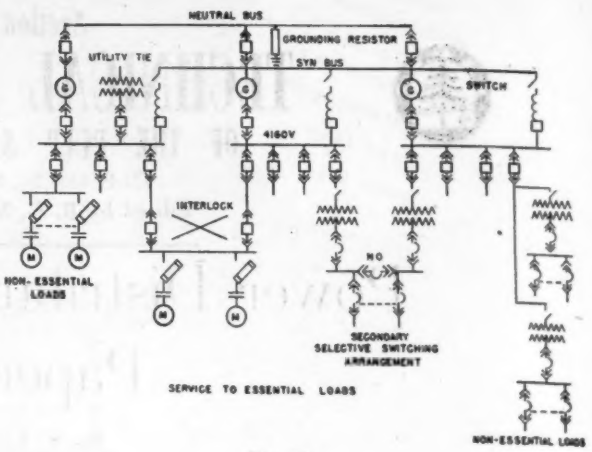


FIG. 3

Modern power-distribution system for typical large-sized paper mill with power generation distribution, and some utilization at 4160 volts.

440-VOLT VERSUS 2300- OR 4000-VOLT MOTORS

Paper mills use a large number of induction and synchronous motors of various ratings, with many in the 50- to 200-hp. class. Since motors of this rating are available at 2300 volts, it leads to the desire to select as many motors as possible for operation directly from a 2400-volt main distribution system on the assumption that such an arrangement results in the lowest over-all system cost. Also, since 2300-volt motors cost less than 4000-volt motors, it has been assumed that a 2400-volt distribution *system* costs less than a 4160-volt distribution system. An examination of many cases showed that these assumptions are not true. Figure 6 shows the results of these studies.

It should be noted that it is more economical to select motors below 200 hp. for operation on a 460-volt system than a 2400-volt system.

Curve (A), representing 440- or 550-volt motor equipment, includes the cost of necessary step-down transformers and low-voltage switchgear.

Curves (B) and (C) show the cost of 2300- and 4000-volt motors and control only. While 2300-volt motors and control cost less than 4000-volt equipment, the true comparison must include the cost of the primary distribution system. For medium and large-sized mills, the power system will cost $2 to $5 more per kva. for a 2400-volt than for a 4160-volt system. Therefore, assuming the 4160-volt system as a base for comparison, curve (C), the 2400-volt system must include the cost of motors and control. That is, curve (B), plus the extra cost of the distribution system, resulting in curve (D). On a true comparison basis as shown in curves (C) and (D), it is seen that a 2400-volt system costs more than a 4160-volt system.

These data show: (1) motors rated 200-hp. or less should be operated on a 460- or 575-volt system and; (2) a 4160-volt power-distribtuion system is more economical than a 2400-volt system where large motors are operated directly at the main distribution voltage. Although these data pertain to induction motors, they are also true for synchronous motors, except that the dividing line between 440- or 575- and 2300-volt equipment is at 150 hp. instead of 200 hp.

Use 460-volt System for Low-voltage Utilization Circuits

Every plant requires some low-voltage power, and for this service a 460-volt system, rather than the 575-volt system as used in the older mills, is recommended. The main reason for this is the greater availability of 440-volt utilization equipment. The 460-volt system is being used in most new paper mills.

Use a 4160-volt System When Generation and Major Utilization Load Is at the Same Voltage Level

One of the most serious electrical problems in the medium and large-sized paper mills had been associated with the use of a 2400-volt main generation and distribution system. From an engineering standpoint, it is difficult to design an economical and satisfactory operating system of large capacity at this low voltage.

The preceding section showed that the 4160-volt system was more economical. Some of the items contributing to higher cost of the 2400-volt system are: the excessive cost for adequate switchgear to handle the large short-circuit currents and the high cost of cable distribution systems.

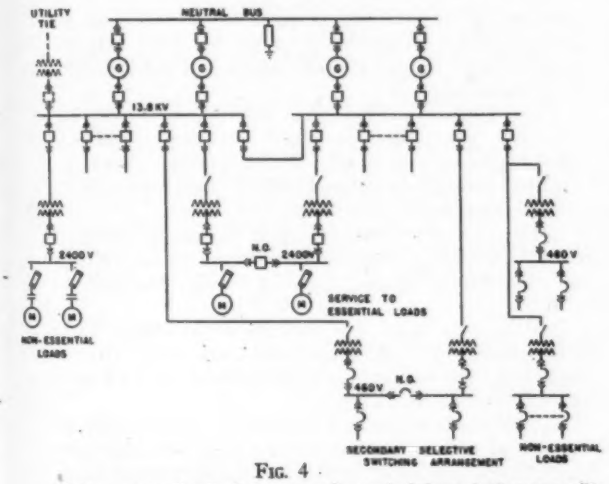


Fig. 4

Modern power-distribution system for typical large-sized paper mill with main power generation and distribution at 13,800 volts

A power circuit breaker must not only be capable of interrupting the fault current at the time of short circuit, but it must also withstand the high mechanical forces produced by the initial first half cycle of short-circuit current. Power circuit breakers have, therefore, two ratings: an "interrupting" rating (commonly called the "IC" rating) which is a measure of its ability to interrupt short-circuit current and a "momentary" rating which is a measure of its ability to withstand the high mechanical stresses produced by the initial short-circuit current. Atlhough the interrupting rating of a power circuit breaker is stated in kva, it may not be able to interrupt that kva at all voltages. Actually, there is a limit in the number of amperes which power circuit breaker will interrupt regardless of the voltage. Therefore, it is often necessary to use larger breakers on a 2400-volt system than on a 4160-volt system, an added penalty for a 2400-volt system. For example, 600-ampere, 150,000-kva breakers are adequate to interrupt 150,000 kva at 4160 volts, whereas a 1200-ampere breaker is required to interrupt 150,000 kva at 2400 volts. Furthermore, on 2400-volt systems the momentary duty rather than the interrupting duty may be the criterion in the selection of the breaker. For example, the momentary duty of a 2400-volt system may be above the momentary rating of a 600-ampere, 150,000-kva breaker even though the interrupting duty on the system is less than the interrupting rating of the breaker; therefore, a breaker with a larger momentary rating is required, another penalty for a 2400-volt system. However, a 600-ampere, 150,000-kva breaker may be applied on a 4160-volt system up to its full momentary and interrupting ratings. The maximum economical breaker ratings for these voltages are:

Breaker Ampere Rating	Interrupting Rating kva	Actual Interrupting Ability kva
2400-VOLT SERVICE		
600	150,000	100,000
1200	150,000	150,000
4160-VOLT SERVICE		
600	250,000	150,000
1200	250,000	250,000

High interrupting capacity motor starters with current limiting fuses also follow the same limits as breakers—i.e., system fault duties of 150,000 kva. at 2400 volts and 250,000 kva. at 4160 volts.

It should be noted that a 4160-volt system allows for approximately two-thirds larger system capacity than a 2400-volt system, which will generally care for all except the very large paper mill power systems.

Turbine-generator sets with the generator rated 9375 kva. are quite common in paper mills. The full load current of a 9375 kva. generator at 2400 volts is 2260 amperes. The largest breakers available, from a sensible cost and equipment standpoint, are rated 2000 amperes. Therefore, multiple breakers, with all the attendant complications, are required just to connect such a generator to a 2400-volt bus. The full load rating of this same generator at 4160 volts is only 1294 amperes, or well within the rating of one 2000-ampere breaker.

The 4160-volt system also offers a lower cable installation cost and lower voltage drop than a 2400-volt system. In this case a good practical rule is: "The installed cost of cable and the voltage drop in cable circuits for equal kva. loading is approximately inversely proportional to the system voltage ($\sqrt{3}$.) or 73% more for the 2400-volt system."

Within the past ten years, several large installations offered ample evidence of the economic limitation of the 2400-volt system. In each of these mills the system switching equipment was adequate for the initial system capacity but totally inadequate for the expansions which occurred. In some instances a considerable in-

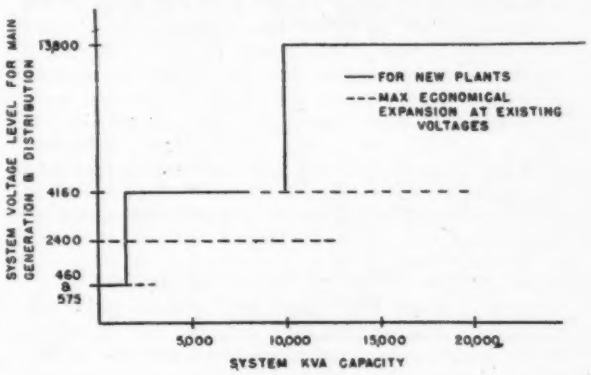


Fig. 5

Chart showing selection of main generation and distribution voltage in terms of mill electrical capacity

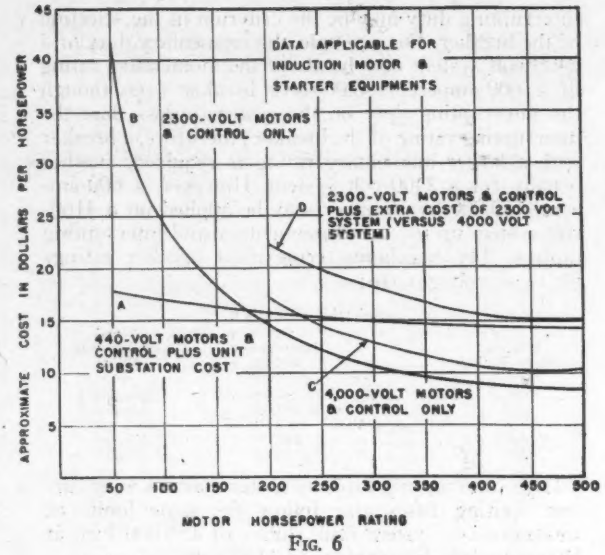

APPROXIMATE COST IN DOLLARS PER HORSEPOWER
45
40
35
30
25
20
15
10
5
DATA APPLICABLE FOR INDUCTION MOTOR & STARTER EQUIPMENTS
B 2300-VOLT MOTORS & CONTROL ONLY
D 2300-VOLT MOTORS & CONTROL PLUS EXTRA COST OF 2300 VOLT SYSTEM (VERSUS 4000 VOLT SYSTEM)
A
440-VOLT MOTORS & CONTROL PLUS UNIT SUBSTATION COST
C 4,000-VOLT MOTORS & CONTROL ONLY
50 100 150 200 250 300 350 400 450 500
MOTOR HORSEPOWER RATING

FIG. 6

Cost of motors, control, and power system versus motor horsepower rating.

vestment was required to revamp and re-arrange the power system to obtain proper system protection.

WHERE A 2400-VOLT SYSTEM IS APPLICABLE

In mills where the existing voltage is 2400 volts, it is usually more economical to add new load at the same voltage rather than to change voltage levels.

One case where a 2400-volt system is especially applicable is where there are large concentrated motor loads for jordans, beaters, etc., served by step-down transformers from the main primary distribution system, such as shown in Fig. 4. In this case, a 2400-volt system rather than a 4160-volt system is preferred. This choice is based on the relative costs of motors and control only and, as was shown previously, 2300-volt equipment costs less than 4000-volt equipment. Here the cost of the distribution system is not a factor, since the cost of transformation to 2400 or 4160 volts is practically the same.

4160-VOLT VERSUS 13,800-VOLT SYSTEMS

The preferred voltage level for main generation and distribution for new plants is 4160 or 13,800 volts. A logical question is: which of these should be selected?

Based on the installed cost of all components comprising the distribution system, a 4160-volt system is more economical than a 13,800-volt system for mill capacities up to about 10,000 kva. For mills in the range of 10,000 to 20,000 kva. capacity, the two are comparable; that comparison includes step-down transformers for motors for the 13,800-volt system. However, individual comparisons should be made for such large mills. For mills above 20,000-kva. capacity, a 13,800-volt system is the logical selection.

If past experience is any guide to future expansion, it would be well to allow ample electrical growth in selecting the main voltage level and system arrangement.

LOAD-CENTER SYSTEM OF POWER DISTRIBUTION

Prior to about 1941, there had been no major advance in power-distribution systems for industrial plants except for introduction of metal-clad switchgear and Pyranol transformers. Power systems were individually studied, and in most cases without proper evaluation of all components, and there was very

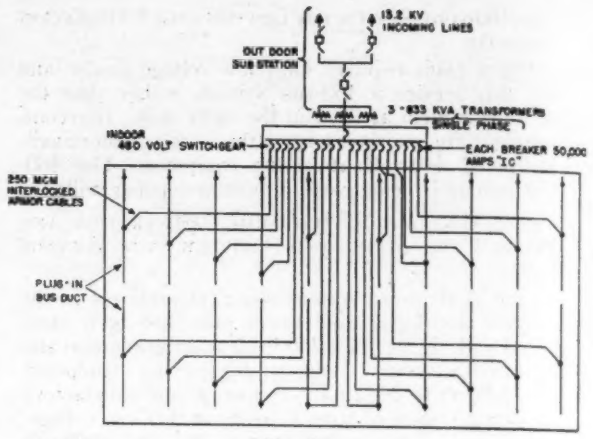

13.2 KV INCOMING LINES
OUT DOOR SUB STATION
3 - 833 KVA TRANSFORMERS SINGLE PHASE
INDOOR 480 VOLT SWITCHGEAR
EACH BREAKER 50,000 AMPS "IC"
250 MCM INTERLOCKED ARMOR CABLES
PLUG-IN BUS DUCT

FIG. 7

Old method of power distribution

little attempt to study basic patterns. There were no general guides available to show the best way of doing the majority of the jobs which had similar over-all requirements.

About 1941 a new approach was taken in studying industrial power systems which resulted in the so-called load-center principle of distribution. There are two fundamentals associated with the load-center principle of distribution. These are:

1. Power is distributed at high voltage to the load center. There it is stepped down to utilization voltage and distributed to the load by short, low-voltage feeders.

2. Where the total load exceeds about 500 to 1500 kva., several unit substations are used rather than a single large substation. Each substation is located near the center of its load area.

The old method—which is referred to here only in the way of contrast—consists of a large substation in which large blocks of power are transformed from high voltage to low voltage in one area and then the power distributed to the load areas by long, heavy-conductor feeders as shown in Fig. 7.

Figure 8 shows the load-center method of power distribution for this same plant.

In comparing the over-all economics of the load-center and the old method of power distribution, the only true comparison is on an *installed* basis including all components, such as the primary switchgear, primary cable, transformers, low-voltage switchgear, and low-voltage cable. Unless all of these are properly

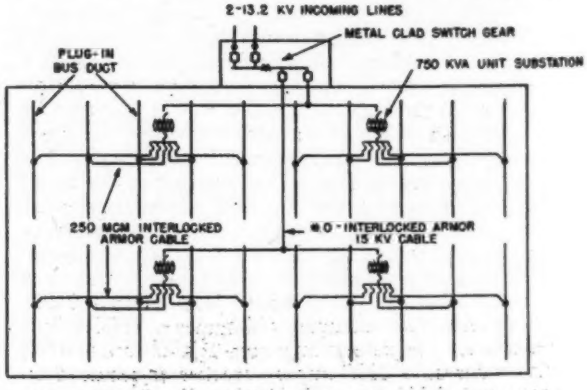

2-13.2 KV INCOMING LINES
METAL CLAD SWITCH GEAR
PLUG-IN BUS DUCT
750 KVA UNIT SUBSTATION
250 MCM INTERLOCKED ARMOR CABLE
#0 - INTERLOCKED ARMOR 15 KV CABLE

FIG. 8

Load-center method of power distribution

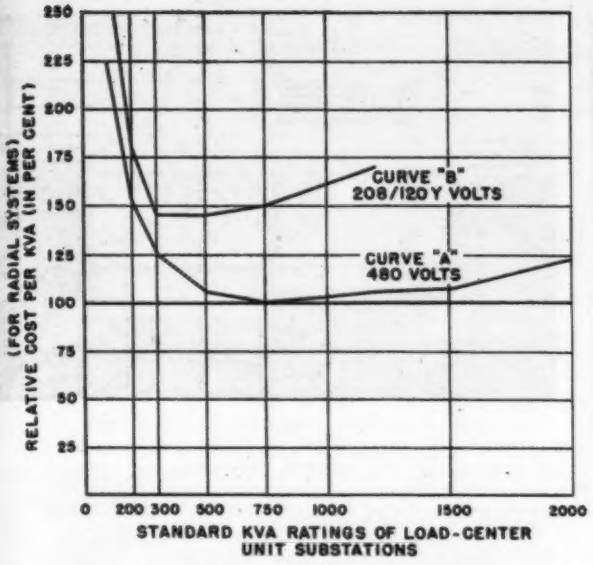


FIG. 9

Relative costs of load-center systems in terms of unit-substation ratings

evaluated, erroneous comparisons will result; for example:

1. Transformer costs, in dollars per kva., decrease as the transformer rating increases, thereby tending to favor large transformer units.

2. However, as the transformer rating increases, the fault duty on the low-voltage bus increases requiring larger and more costly breakers. Therefore, the cost of low-voltage switching equipment favors small transformer units.

3. The unit cost of the primary distribution system, in dollars per kva., decreases as the circuit loading increases, but the cost of the low-voltage distribution system increases as the feeder loading increases and at a faster rate.

The optimum size of substation, considering all of the above variables and contradictory trends, is shown in Fig. 9. It should be noted that for 460-volt systems the optimum size of substation ranges from 500 to 1500 kva., which is much smaller than was considered economical previously. Although these data are based on a load density of 10 volt-amperes per square foot of plant floor area, the optimum size substation for other load densities ranging from 3 to 30 volt-amperes per square foot still come within this same general range. These data also apply to 575-volt systems.

Cost data from reliable contractors and plant engineers show that the installed cost of the entire distribution facilities with the load-center system, including unit-type substation equipment is 15 to 30% less than the old method of distribution. Figure 10 shows the total and component costs of these two methods of power distribution for the plant and layout of Figs. 7 and 8.

The load-center system is applicable to all sizes of paper mills where a transformation of voltage is required. Although this discussion emphasized the load-center principle for low-voltage distribution, the same principle also applies to high-voltage distribution.

Low-voltage Unit Substations

The load-center unit substation was introduced in connection with the load-center principle of distribution. These unit substations combine the functions of transformation and low-voltage circuit protection in a compact, factory-assembled unit equipment. These substations have the features of safety—since the low-voltage switchgear is metal enclosed and the switching devices are of adequate interrupting rating—simplicity, and ease of installation. Installation costs of unit-type equipment range from 15 to 30% less than the on-the-job assembly of piece-meal components. Typical unit-substation installations are shown in Fig. 11 (a) and (b).

The load-center system with unit substations is particularly adaptable for load expansions; as the load increases and exceeds a given substation capacity, additional unit substations can be added in the new load area.

In order to obtain the minimum investment for the secondary distribution system, the unit substations should be located as near their load center as possible. Therefore, it is important when considering new expansions to allow space for the unit substations in the load areas—and this space requirement is relatively small. Unit substations do not necessarily have to be on the floor area; they may be in the basement or on a balcony.

Most unit substations in paper mills are located indoors, so the transformer may be Pyranol filled or of the air-cooled dry type. The following is a guide to the selection of the proper type of transformer:

Installation Conditions	Transformer
Average clean, dry conditions, free from lightning	Dry type or Pyranol
Dirty locations, oil vapors, chemical vapors, metal dust	Pyranol
Wet locations	Pyranol
Direct exposure to lightning	Pyranol
Installed directly over machine tools	Dry type

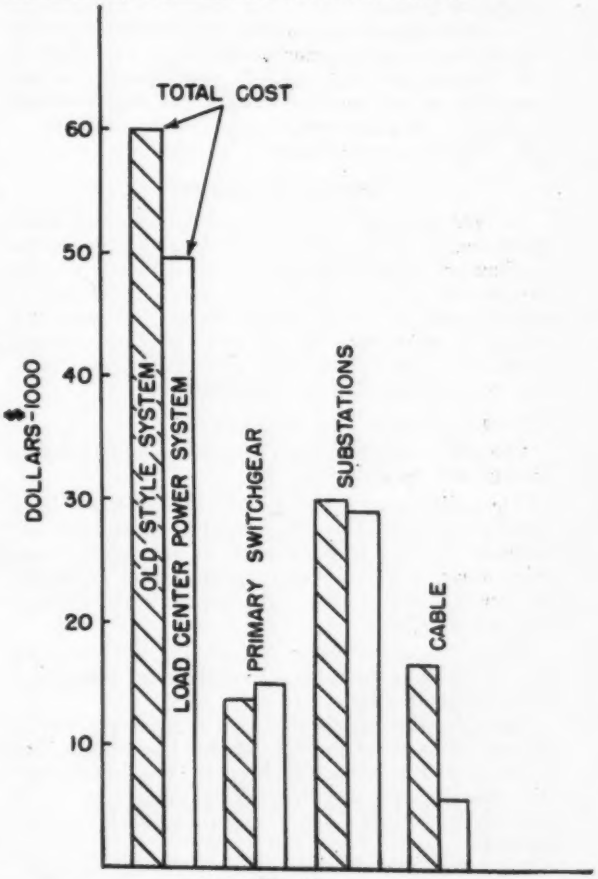


FIG. 10

Chart showing total and component costs of the old-style and the load-center method of power distribution for the layouts of Figs. 7 and 8

FIG. 11a
Typical installation of load-center unit substation
Pyranol filled transformer

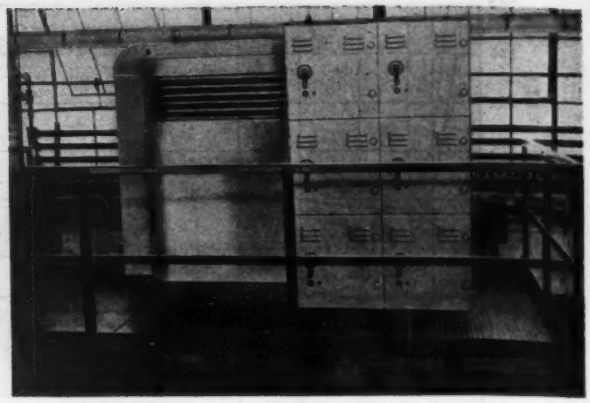


FIG. 11b
Typical installation of load-center unit substation
Dry-type transformer

The following is a summary of the advantages of the load-center principle of power distribution with unit-substation equipments:

1. Lower installed cost of the entire power system.
2. Easier to install.
3. Adaptable to future expansion. Unit substations can be added as the load increases; it is not necessary to invest extra capital in substations larger than necessary in anticipation of some future increase in load.
4. Voltage regulation is excellent because of short secondary feeders.
5. Less engineering required.
6. Lower system copper losses.
7. Outage of a single feeder circuit usually does not materially affect production since the feeder circuit loading is relatively small.
8. Higher salvage value.

Service Reliability

In most paper mills there are certain essential loads which require a high order of service reliability. In the medium and large-sized plants, it is customary to split the generation buses into two or more sections and to supply essential loads which operate at generated voltage from separate bus sections. However, in small plants, it is usually not economical to provide duplicate or equivalent service reliability.

460-VOLT DISTRIBUTION SYSTEMS

The most common types of 460-volt distribution systems are shown in Fig. 12.

The *radial* system, Fig. 12 (a), characterized by a single primary channel and substation, is suitable for nonessential load services, such as for storage and office areas, where a power outage is not especially detrimental. The merits of the radial system are low cost and simplicity.

The *secondary-selective* system, Fig. 12 (b) and (c), is especially desirable for continuous process and boiler-house auxiliaries.

Basically, this consists of two independent radial systems but interconnected on the low-voltage bus through a normally open tie breaker. This method retains the operating simplicity of the radial system yet provides an excellent degree of service reliability economically.

The secondary-selective arrangement may be composed of two independent substations, as shown in Fig. 11, with an external tie circuit between substations, or, where space is important, it may consist of a "double-ended" unit as shown in Fig. 13.

It should be noted that with the secondary-selective arrangement, service reliability is the result of the *system arrangement* in contrast to some methods where service reliability is dependent upon the reliability of the type of equipment.

Some of the advantages of the secondary-selective system are:

1. Duplication of supply to the low-voltage bus, thus providing continuous service for the *entire* load area. The primary circuits are usually physically separated throughout their entire length, making it improbable that a fault on one circuit will be transferred to the other circuit.
2. Retains the simplicity of the radial distribution system. No special relaying is required.
3. All transfer switching is performed by full-capacity air circuit breakers, thus contributing to safety. Transfer switching can be accomplished automatically, if necessary, at very little extra cost.
4. Under normal operation, both substations share in carrying the load, resulting in excellent voltage regulation and low system losses.

In the usual application the transformer secondary and tie breakers are manually operated. However, where a higher degree of continuity of service is necessary, such as for essential boiler-house auxiliaries and paper machines, the breakers may be electrically oper-

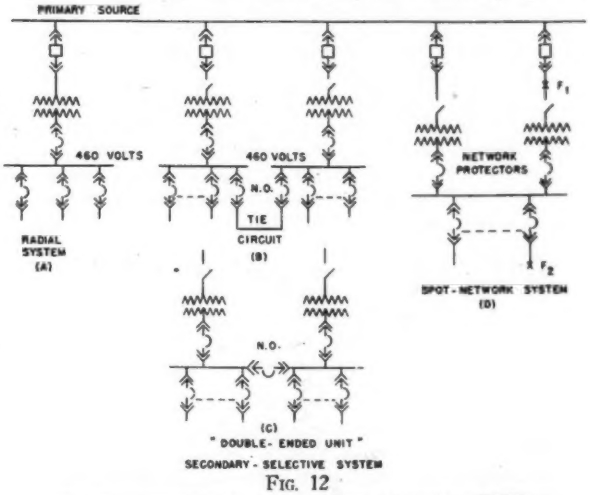


FIG. 12
Circuit arrangements for various degrees of service reliability

FIG. 13
"Double-ended" unit substation with secondary-selective switching arrangement

FIG. 14
Network protector with associated relays shown in upper-right-hand compartment

ated to automatically transfer power in response to loss of voltage in either of the main power channels.

The *spot-network* arrangement, as shown in Fig. 12(d), is used where the highest degree of service reliability is necessary, such as boiler-house auxiliaries and particularly in conjunction with the use of pulverized fuel.

The "network protector," Fig. 14, consists essentially of an air circuit-interrupting device combined with network relays. The network protector replaces the transformer secondary breaker used in the radial or secondary-selective unit-substation equipment. However, the feeder breakers are standard air circuit breakers. The network relays perform the following functions: (See Fig. 12(d).)

1. Opens the protector due to reverse power for a fault in the primary circuit (F_1), thus isolating one power source.
2. Does not open the protector for feeder faults (F_2). (The feeder breaker opens to clear the fault.)
3. Permits a protector to reclose only when true polyphase power will flow from the primary source to the load and allows reclosure only when the transformer voltage is greater than that of the load bus.

The following are relative costs, on an installed basis, of these various types for 460-volt distribution systems.

Radial—100% (base comparison).

Secondary Selective—105 to 140%, depending upon the reserve capacity in each transformer.

Spot Network—115 to 150%, depending upon the reserve capacity of transformer.

Secondary Selective with automatic throwover in response to loss of voltage—115 to 150%.

It should be noted that the secondary-selective arrangement does not cost much more than a straight radial system, yet it provides duplicate power channels and a high degree of service reliability so essential to many paper-mill processes.

2400- TO 13,800-VOLT DISTRIBUTION SYSTEMS

The principles and circuit arrangements for various degrees of service reliability for 2400- to 13,800-volt systems are the same as outlined above for low-voltage systems. Some typical arrangements are shown in Figs. 3 and 4.

System Grounding

The subject of grounding power systems for industrial plants has received considerable attention the last few years, as evidenced by the numerous articles in engineering publications. Operators are beginning to appreciate the importance and advantages of a grounded power-distribution system. The present trend in system operation and design is to ground all power systems operating above 600 volts and with particular emphasis on power systems involving generation and distribution at a common voltage such as is generally true for the medium- and large-sized paper mills.

Although this discussion is limited to grounding practices for systems operating above 600 volts, the advantages also apply to low-voltage systems.

ADVANTAGES OF GROUNDED SYSTEM OPERATION

The advantages of a grounded system may be summarized as follows:

1. Reduction of overvoltages to a safe value.

Overvoltages caused by switching transients or arcing ground faults on ungrounded systems may be in the order of six times the normal voltage. With a grounded system these are materially reduced. Actual

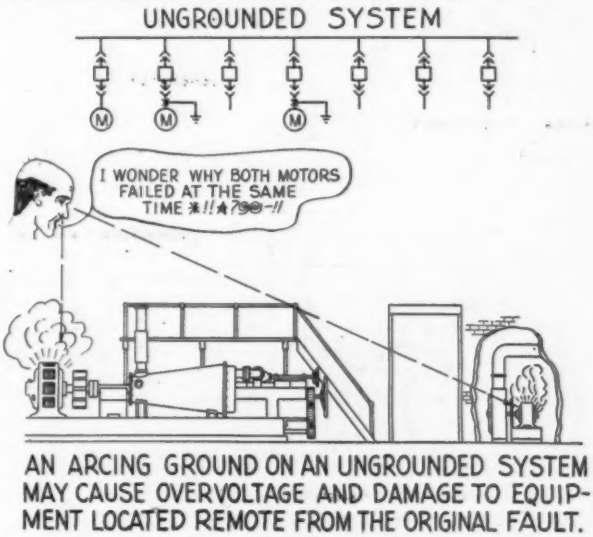

UNGROUNDED SYSTEM
M
M
M
I WONDER WHY BOTH MOTORS FAILED AT THE SAME TIME *!!★?@@-!!
AN ARCING GROUND ON AN UNGROUNDED SYSTEM MAY CAUSE OVERVOLTAGE AND DAMAGE TO EQUIPMENT LOCATED REMOTE FROM THE ORIGINAL FAULT.

FIG. 15
Illustration showing the effect of an arcing ground on an ungrounded system

cases have shown that such overvoltages on ungrounded systems may cause insulation and equipment failures remote from the point of original fault location. Operating experience on numerous systems, particularly among the utilities, has shown that grounding reduced the number of insulation failures.

2. Automatic selective indication of ground faults in feeder circuits, thus avoiding the necessity of locating system grounds by trial-and-error de-energization of feeder circuits.

3. Better over-all protection to equipment, especially generators, transformers, and motors protected with differential-type relays.

4. Greater safety to personnel.

Limitations of Ungrounded Systems

The usual argument in favor of an ungrounded system is that when a ground occurs the system can continue to operate until it is convenient to shut down to locate the ground.

Location of grounds is always a problem and especially where there are a large number of feeder circuits. The usual procedure is to open one circuit at a time until the grounded feeder is located. When there is more than one ground on the same phase, it is even more troublesome.

When grounds occur on two different phases, it is the equivalent of a line-to-line fault in which case at least one feeder breaker will open and thus power to a load area is lost. Since it is an axiom among operators that there is always a ground on industrial systems, it doesn't appear that these limitations regarding continuity of service are very desirable in plants like paper mills.

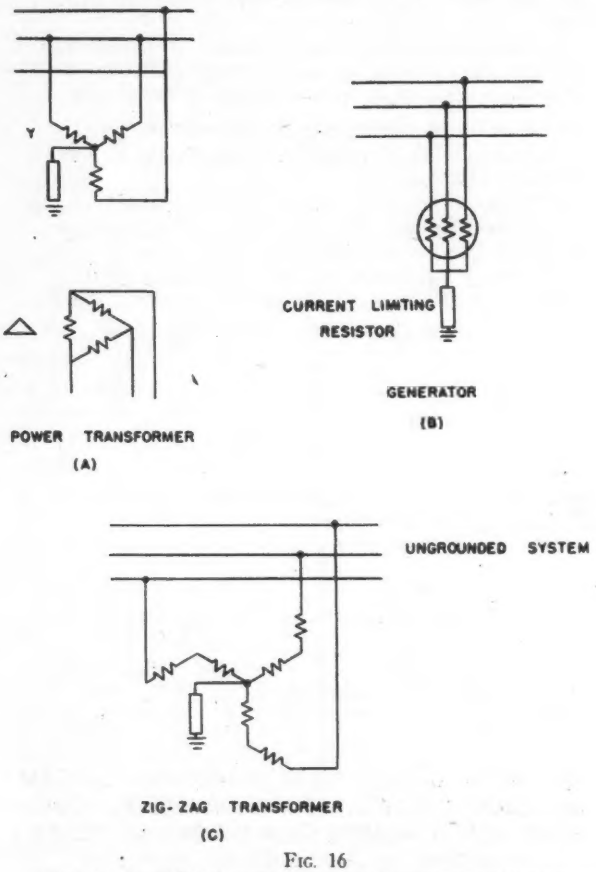
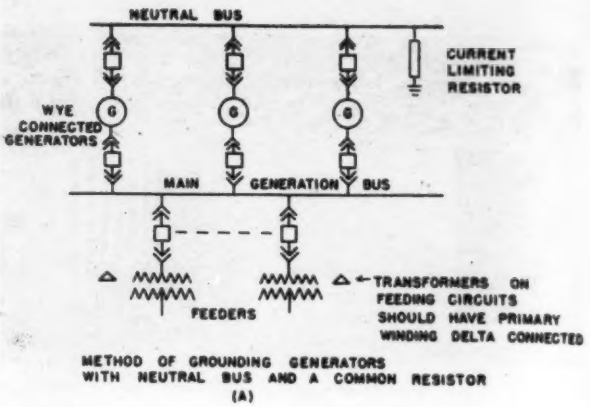


Fig. 16
Methods of establishing grounding sources for wye-connected equipment and an undergrounded power supply



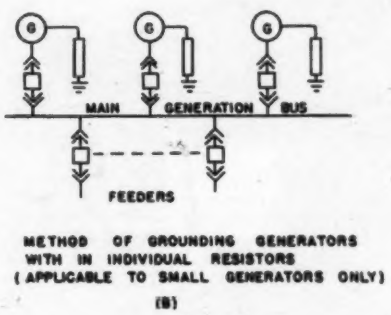


Fig. 17
Methods of grounding generators

Grounds may develop into arcing grounds in which case there is the likelihood of overvoltage. Such overvoltages may cause failure to equipment located remote from the point of ground, as depicted in Fig. 15.

System Grounding

Although many operators appreciate the numerous advantages of the grounded system, the argument advanced against its adoption is that the occurrence of a ground automatically trips that feeder breaker. However, that is one very good reason in favor of the grounded system since ground relaying is selective. In case of feeders to nonessential loads, an outage should not be objectionable. Service to continuous-process loads must be maintained, but since duplicate power sources are normally furnished for such loads (by the secondary-selective or spot-network arrangements as shown in Fig. 12), an outage of one channel does not cause a loss of power to the load. Therefore, in a properly planned distribution system, automatic selective ground relaying and feeder isolation is an advantage rather than a disadvantage.

In addition to the advantage of selective relaying for feeder ground faults, the grounded system results in a higher degree of protection to generators, large motors, and transformers having differential relay protection. In the case of motors and generators, nearly all faults involve a winding and ground. If the system is not grounded, protection for grounds in machine windings is provided only upon the occurrence of a second ground in another phase or if the first ground develops into a phase-to-phase fault.

Methods of System Grounding

A power system may be solidly grounded or grounded through an impedance. A solidly grounded

system for industrial plants is objectionable because of the magnitude of current which may flow during ground faults. In industrial plants it is the practice to limit the ground current by a resistor—usually to 500 to 1000 amperes—or to a value providing proper and selective ground relaying. Limiting the ground current reduces the "burning" and melting effects in rotating machines, switchgear, cable, and metallic parts. Limiting the ground-fault current is also advantageous in that the "bump" to the system during a ground fault is small and will not generally cause rotating machinery to drop off the line.

The most common methods of establishing the grounding source are wye-connected power transformers or generators as shown in Fig. 16 (a) and (b). The equipment selected for the grounding source should be that most likely to always be in service. Transformers connected on feeder circuits, such as shown in Fig. 17 (a), should not be used as a grounding source.

Ungrounded systems which otherwise have no wye connections available for a neutral potential can be grounded by a zig-zag transformer as shown in Fig. 16 (c). The zig-zag transformer arrangement is more economical than a wye-connected power transformer used only as a means of establishing the grounding point.

There is often misunderstanding and confusion regarding transformer primary connections for step-

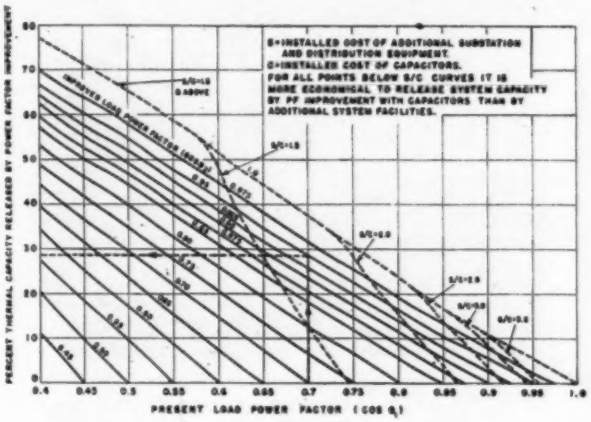

S=INSTALLED COST OF ADDITIONAL SUBSTATION AND DISTRIBUTION EQUIPMENT
C=INSTALLED COST OF CAPACITORS.
FOR ALL POINTS BELOW S/C CURVES IT IS MORE ECONOMICAL TO RELEASE SYSTEM CAPACITY BY PF IMPROVEMENT WITH CAPACITORS THAN BY ADDITIONAL SYSTEM FACILITIES.
PERCENT THERMAL CAPACITY RELEASED BY POWER FACTOR IMPROVEMENT
PRESENT LOAD POWER FACTOR (COS θ1)

FIG. 18

Per cent system capacity released by power-factor improvement

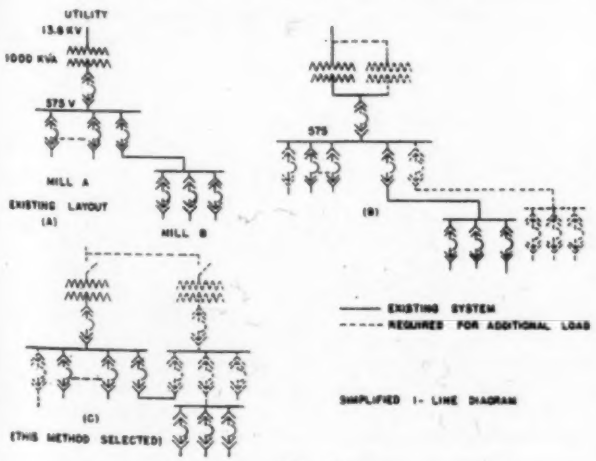


FIG. 19

Diagram showing expansion of power-system facilities of a small-sized mill described in Example I.

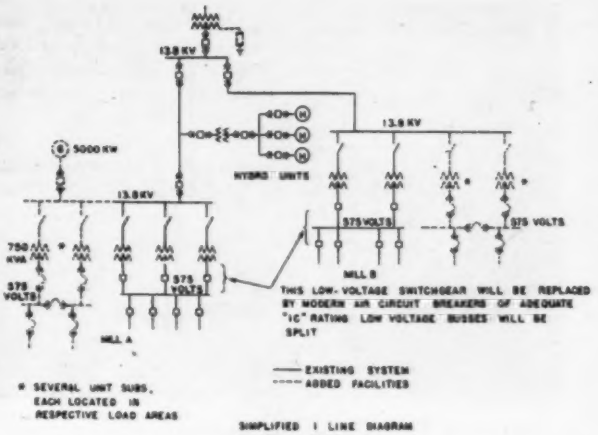

13.8 KV
5000 KW
HYDRO UNITS
750 KVA
575 VOLTS
MILL A
MILL B
THIS LOW-VOLTAGE SWITCHGEAR WILL BE REPLACED BY MODERN AIR CIRCUIT BREAKERS OF ADEQUATE "IC" RATING. LOW VOLTAGE BUSSES WILL BE SPLIT
EXISTING SYSTEM
ADDED FACILITIES
* SEVERAL UNIT SUBS. EACH LOCATED IN RESPECTIVE LOAD AREAS
SIMPLIFIED 1 LINE DIAGRAM

FIG. 20

Diagram showing expansion of power-system facilities of a medium-sized mill described in Example II

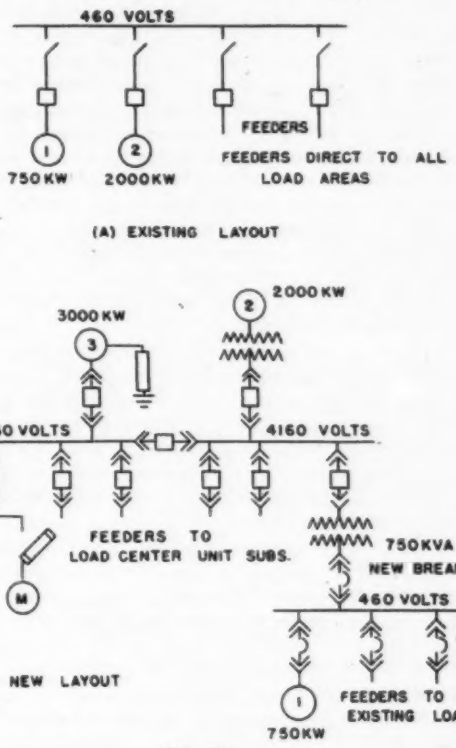


FIG. 21

Diagram showing modernization and expansion of power-system facilities of a medium-sized mill described in Example III

down transformers on feeder circuits, such as load-center units, shown in Fig. 17 (a), for operation on either grounded or ungrounded systems, but particularly in respect to 4160-volt systems. In this case, it is thought that the transformer primary must be wye-connected and the neutral grounded. This is not true.

Even if the transformer primary is wye-connected and the neutral brought out, the neutral should not be grounded as that would in effect cause the system to be solidly grounded, which is not the recommended operating practice. Furthermore, grounding each transformer establishes multiple grounding sources, thus requiring directional ground relaying equipment.

The transformer primary connections are independent of the type of system connection or whether the

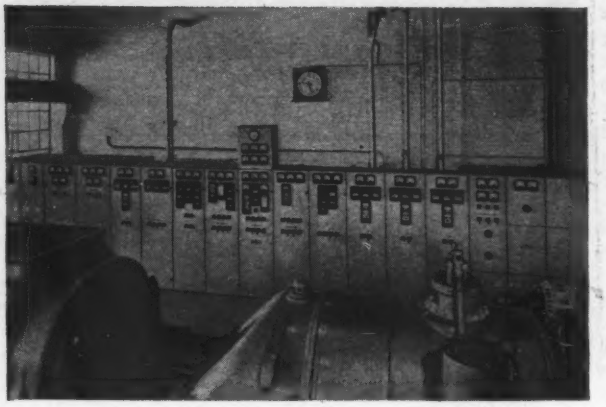


FIG. 22
Installation of a modern metal-clad switchboard for main generation and distribution

system is grounded or ungrounded. Therefore, in the interest of over-all simplicity, the primary should be delta connected. The standard arrangement for load-center transformers is a delta-connected primary.

Figure 17(a) shows the most common method of system grounding when several generators are involved. A common neutral bus is connected to a single current-limiting grounding resistor. In this method the ground current is independent of the number of generators in operation. Figure 17(b) shows an alternative arrangement, generally applicable only when the machines are of small rating. In this case, the magnitude of ground current is affected by the number of machines in operation.

It is just as important to properly engineer a plant protective grounding system as it is the power-distribution system proper. Only when sufficient attention is given to the overall plant protective grounding requirements is there assurance of an adequate and safe grounding system. This applies equally well to ungrounded or grounded systems and to high- and low-voltage power systems.

The plant protective grounding system must have a direct path to ground in order to avoid unintentional transfer of ground currents among various metallic parts of the building and piping system, and to avoid differences of voltage between exposed metallic parts which might constitute a hazard to personnel.

One example illustrating the result of improper plant protective grounding occurred when a heavy stray ground current melted a building stairway. In another plant with an extended underground piping system, there was an epidemic of pipe failures and leaks at crossover points each time a major fault occurred. After the piping network was properly bonded, these troubles disappeared.

The main grounding system should be interconnected with the rest of the grounding paths via cable sheaths, plant piping, etc., and the plant piping system should be bonded to the steel of the building structure. The low-voltage protective grounding system to motor and starter frames, busway, transformers, and switchgear should be interconnected with the main grounding system. If the 460-volt system is wye-connected and grounded—and the trend is towards grounded low-voltage systems as well as grounded high-voltage systems—the transformer neutrals should be connected to the individual substation grounds and all low-voltage substation neutrals interconnected directly or via the protective grounding system.

Economic Advantages of Capacitors

Small mills which have little or no synchronous motors to improve the system power factor and which purchase all or the major share of their power can usually use capacitors to economic advantage.

In these mills the principal reasons for using capacitors are: reduce power costs and release system capacity.

There are also other advantages of using capacitors such as improvement in voltage level and reduction in system losses, but these may be classified as additional benefits.

The principal reason for the use of capacitors in small mills has been to reduce the power costs when a power-factor clause, or its equivalent, is part of the rate structure.

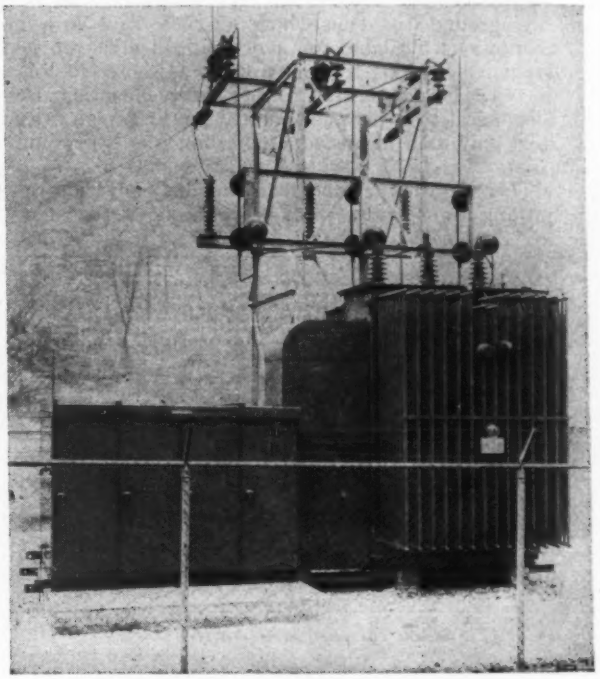


FIG. 23
Installation of a master unit substation such as used for the tie to the utility system

Reports from many plants using capacitors for this purpose show that capacitors pay for themselves in a period of 6 months to 2 years. This corresponds to a rate of return on the capacitor investment of 50 to 200%! Therefore, whenever the power rate involves a power-factor clause, or its equivalent, it is well worthwhile to investigate the use of capacitors.

What is meant by the expression "release system capacity?" When capacitors are operating on a system they *deliver* kilovars (sometimes referred to as leading reactive current) furnishing magnetizing current for motors, transformers, etc., thus reducing the current from the power supply. Less current means less kva. or load on transformers and main and branch feeder circuits. This means capacitors can be used to reduce overloading of existing equipment or, if the equipment is not overloaded, additional load can be added to the system without exceeding present loading levels.

Figure 18 shows (1) the per cent system capacity released by power-factor improvement; and (2) the economic limits of obtaining additional system capacity by capacitors.

It should be noted that the per cent system capacity released is larger for the lower initial load power factors.

Whether it is economical to obtain additional system capacity by capacitors depends upon the initial and corrected power factor of the load and the cost relationship (S/C) between new substation and distribution facilities (S) and the cost of capacitors (C). The costs should be on an *installed* basis for a true comparison.

Example

Substation rating, 1000 kva and operated at full load.
Present power factor, 70%.
Present average kilowatt load = 0.7 by 1000 = 700 kw.
System voltage, 460 volts.

1. How much system capacity is released if the power factor is improved from 70 to 95%?

From Fig. 18 it is found that improving the power factor from 70 to 95% releases 28.5% capacity; i.e., 28.5% or 0.285 × 700 = 200-kw load at the original 70% power factor can be added without increasing the load on the 1000-kva. substation, or, in terms of kva., this is 0.285 × 1000 = 285 kva.

2. Is it economical to use capacitors for this purpose?

The installed cost of new substation and distribution facilities (S) — based on the load-center principle of power distribution—will be in the order of $23 per kva. The installed cost of capacitor equipment (C) for 460-or-575-volt systems will not exceed $9 per kva. Therefore, the S/C ratio is 23/9 or 2.55. Assume this is 2.5 which can be read directly from the curve. Since the curve of S/C = 2.5 is considerably above 0.7-power-factor point, this means it is substantially cheaper to obtain this additional 285 kva. of system capacity by capacitors. As a matter of fact, the break-even point corresponds to an S/C value of about 1.6, or, in other words, the substation and distribution facilities, installed, would have to cost as little as 1.6 × $9 or $14.40 per kva. to even compete with the capacitor method.

Although this example was for a small-sized mill, the basic data of Fig. 18 apply to any size or type of plant.

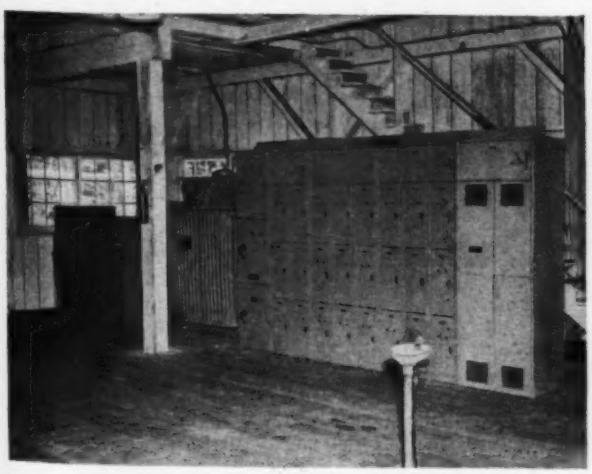


FIG. 24
Modern installation of a Cabinetrol unit substation for motor control

FIG. 25
Installation of limitamp high-interrupting capacity 2300-volt motor starters

Not only are capacitors economical to increase system capacity of existing facilities, but they are also economical for new installations. This fact was recognized during the war and many of the industrial plants incorporated capacitors as part of the system design.

For maximum over-all benefits, the capacitors should be located at or near the load, which means on the 460- or 575- volt rather than the main 2400- or 4160-volt systems.

Cost of Induction Motor Plus Capacitors Versus Synchronous Motor for Equal Power-Factor Improvement

The following tables show the motor ratings where the cost of an induction motor and starter plus capacitors (including a separate switching device for the capacitors) is less than an 0.8 power-factor synchronous motor with starter.

440- AND 550-VOLT EQUIPMENT

Motor Speed, r.p.m.	Motor Rating, hp.
1800	150 and less
1200	100 and less
900	100 and less
600	100 and less

2300-VOLT EQUIPMENT

The synchronous-motor equipment costs less than the induction-motor and capacitor combination over the entire horse power and speed range if a power circuit breaker is used to switch the capacitors.

2300-VOLT MOTOR AND CONTROL EQUIPMENT BUT 460- OR 575-VOLT CAPACITORS *

Motor Speed, r.p.m.	Motor Rating, hp.
1800	175 and less
1200	125 and less
900	125 and less
600	125 and less

* Capacitors should be located on the 460- or 575-volt systems rather than 2400- or 4160-volt systems for maximum over-all benefits.

In these comparisons the capacitor rating is selected on the basis that the induction-motor and capacitor combination will furnish the same amount of power-factor improvement at full load as an 0.8 power-factor synchronous motor of equal rating.

At partial-load operation the synchronous motor can supply slightly more kilovars to the system than the induction-motor plus capacitor method, but this difference is not great enough to be the basis of the selection. As far as losses are concerned the two methods are almost equal.

Examples of Expansion and Modernization of Paper-Mill Power-Distribution Systems

Example I—Expansion of a small-sized mill

Figure 19(a) shows the power-distribution system before expansion. The expected additional load in mill

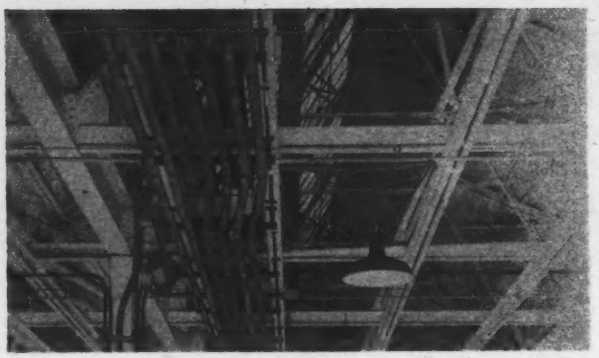


FIG. 26
Installation showing interlocked-armored cable

A was approximately 200 kva. and in mill B approximately 450 kva.

One method suggested to supply this extra load is shown in Fig 19(b). However, paralleling transformer banks would raise the system fault level above the rating of the existing breakers, thus requiring replacement of all low-voltage switch-gear. It would also require another large, and costly, feeder circuit for the 450-foot run between mills.

The load-center method shown in Fig. 19(c) was the one selected. It costs less and has other advantages; for example, the present feeder circuit between mills can be utilized as an emergency tie circuit. Also, this method requires the minimum number of changes to the existing distribution system. (This is a good example of the advantages of the load-center principle for mill expansion.)

Example II—Expansion of a medium-sized mill.

Figure 20 is a simplified one-line diagram showing the system layout before and after expansion. The 13,800-volt system serves as the main distribution system and the tie to the utility and mill B.

A 5000-kw noncondensing automatic-extraction turbine generator unit will be added for process-steam requirements in mill A. One problem was the selection of the voltage for the new generator as this would affect the method of power distribution. It was desirable to operate the new generator on either of the existing 575- or 13,800- volt systems in mill A.

The method adopted was generation at 13,800 volts, with the generator connected directly to the main distribution system, and use of unit substations in load areas to step down to utilization voltage. This arrangement results in the lowest over-all cost and also has several operating advantages, particularly in regard to the control of kilowatts and kilovars on the main 13,800-volt system.

The present low-voltage breakers are not adequate for the present fault duty and a program is underway to replace them with modern air circuit breakers of adequate interrupting rating. The present low-voltage buses will be split to reduce the fault duty but interconnected by a normally open tie circuit for emergency operation.

Example III—Modernization and expansion of a medium-sized mill.

Figure 21(a) is a simplified one-line diagram of a mill where all generation and utilization is at 460 volts.

In this mill all breakers are of inadequate rating and are to be replaced. In addition to this modernization program, there is an expansion program to consider for the immediate addition of a 3000-kw turbine and the future addition of a 3000- or 4000-kw unit.

The power-generation and distribution system selected is shown in Fig. 21(b). The main generation and distribution voltage is 4160 volts, which is adequate for ample future load expansion. The existing 750-kw. generator is retained on the 460-volt system to feed a local load, but will be taken out of service when the 3000-kw unit is put in service. All other existing and new 460-volt loads will be served by unit substations from the main 4160-volt bus. New motors above 200 hp. in concentrated load areas will be operated directly from the main 4160-volt system.

The existing 2000-kw. machine, which will be retained in the future, will be connected to the 4160-volt system through a step-up transformer as it was impractical to rewind the generator for 4160-volt operation without loss of a substantial amount of generator capacity. (De-rating of machines should be checked for each case when considering rewinding generators for higher voltages.)

Types of Equipment Available

The present trend in power equipment is to the use of factory-assembled unit-type equipment completely wired and ready for installation.

One advantage from the user's standpoint is the lower over-all cost, but there are others which will be mentioned later. This lower cost is the direct result of standardization and repetitive manufacture of component parts and assemblies. Standardization is not just an overworked expression—it is the real backbone of industry. Standardization of equipment by manufacturers is just as desirable as standardization of large batch-process manufacturing is to the paper industry; the objective in each case is the same—a lower unit cost.

Some of the advantages and features of standardized factory-assembled unit-type equipments are: (1) lower first cost; (2) lower installed cost; (3) ease of installation; (4) safety; in general, equipments are totally metal enclosed; (5) flexibility—e.g., additional switchgear units are easily added; (6) high salvage value; (7) simplification of engineering; (8) simplification in ordering; (9) neat in appearance; (10) available in shorter time; and (11) generally include desirable operating and maintenance features. For example, the drawnout-type breakers in switchgear.

Some of these various types of equipment are shown in the following illustrations:

Figure 22 is an installation of modern metal-clad switchgear used for main power generation and distribution circuits.

Figure 23 is a master unit substation used for interconnecting utility and plant power sources when these voltage levels are not the same.

Figure 24 is a Cabinetrol unit, which combines the function of transformation and motor control in a single convenient equipment.

Figure 25 shows a high-interrupting duty fused-motor-starter equipment such as is used for jordans, beaters, etc., operated from 2400- or 4160-volt services.

Figure 26 shows a cable installation with interlocked armored cable. The installed cost of interlocked armored cable is only 50 to 75% of the installed cost of a comparable quality cable in conduit. Although this cable may not be applicable in all mill areas—depending upon the atmospheric conditions—it should be used whenever possible to realize a minimum cost of cable system. This type of cable is available, with various sypes of sheaths under the armor, for service voltages up to 15 kv.